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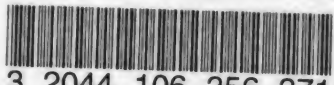
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*New flora Britannica illustrated
with one hundred and thirty ...*

Sydenham Edwards



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Reverend Mr. Smith
Oct 1859

THE NEW
Flora Britannica,
&c. &c.



Painted by Ed. Edwards.

London. Published Aug^r 1 1806 by G. Kearsley Fleet Street

Engraved by F. J. Smith

1 *Sempervivum Arachnoides*
Cobweb Houseleek.

2 *Strelitzia Regina*
Canna leaved Strelitzia.

S. J. Brudford

THE NEW
Flora Britannica,
ILLUSTRATED WITH
ONE HUNDRED AND THIRTY-THREE
PLANTS,
ENGRAVED BY SANSOM,
FROM THE
ORIGINAL PICTURES,
AND
COLOURED WITH THE GREATEST EXACTNESS
FROM
DRAWINGS BY SYDENHAM EDWARDS.

—◆—
IN TWO VOLUMES.

VOL. II.
—◆—

LONDON:

PRINTED FOR JOHN STOCKDALE, PICCADILLY,
BY T. BENSLEY, BOLT-COURT, FLEET-STREET.

1812.



Painted by Syd. Edwards

London. Published Aug. 1. 1866. by C. Kearney, Fleet Street

Engraved by F. S. Smith

Iris germanica
1 German Iris

Iris versicolor
2 Various coloured Iris

Iris variegata
3 Variegated Iris

PLATE XXX.

1. IRIS GERMANICA.

GERMAN IRIS.

2. IRIS VERSICOLOR.

VARIOUS-COLOURED IRIS.

3. IRIS VARIEGATA.

VARIEGATED IRIS.

THIS genus contains plants of the fibrous, tuberous, and bulbous-rooted flowery herbaceous perennial kinds.

It belongs to the class and order *Triandria Monogynia*, and ranks in the natural order of *Ensatae*.

The characters are: that the calyx has bivalve spathes, separating the flowers, permanent: the corolla six-parted: petals oblong, obtuse; the three exterior ones reflex, the three interior upright and sharper; all connected at the claws into a tube, of different lengths in the different species: the stamina have three awl-shaped filaments, incumbent on the reflex petals: anthers oblong, straight, depressed: the pistillum is an inferior oblong germ: style simple, very short: stigmas three, petal-form, oblong, carinated within, furrowed without, incumbent on the stamens, two-lipped: outer lip smaller, emarginate: inner larger, bifid, subinflected: the pericarpium is an oblong, cornered capsule, three-celled, three-valved: the seeds several and large.

The species cultivated are: 1. *I. pumila*, Dwarf Iris; 2. *I. susiana*, Chalcedonian Iris; 3. *I. Florentia*, Florentine Iris; 4. *I. biflora*, Twice-flowering Iris; 5. *I. aphylla*, Leafless Iris; 6. *I. variegata*,

Variegated Iris; 7. *I. Germanica*, German Iris; 8. *I. sambucina*, Elder-scented Iris; 9. *I. squalens*, Brown-flowered Iris; 10. *I. cristata*, Crested Iris; 11. *I. tricuspis*, Trifid-petalled Iris; 12. *I. Xiphium*, Bulbous-rooted Iris; 13. *I. Pseudacorus*, Common Yellow or Water Iris; 14. *I. fatidissima*, Stinking Iris; 15. *I. Virginica*, Virginian Iris; 16. *I. versicolor*, Various-coloured Iris; 17. *I. ochroleuca*, Pale-yellow Iris; 18. *I. verna*, Spring Iris; 19. *I. Persica*, Persian Iris; 20. *I. graminea*, Grass-leaved Iris; 21. *I. spuria*, Spurious Iris; 22. *I. Sibirica*, Siberian Iris; 23. *I. Martinicensis*, Martinico Iris; 24. *I. Pavonia*, Peacock Iris; 25. *I. tuberosa*, Snake's-head Iris.

The first has the root brownish on the outside, white within, knobbed, with pale fibrils: the leaves acute, sometimes shorter, sometimes longer than the flower: the stem or scape very short, often scarcely an inch in length: germ oblong, bluntly and obscurely three-cornered, an inch long, enclosed within two spathes, ending in the tube of the corolla, which is slender, and from two to three inches in length: all the petals are almost entire, blue or purple, varying much in colour, insomuch that the same flower changes, and from blue becomes more and more red: outer beards blue, inner white, with yellow tips. It is a native of Austria, flowering in April.

There are varieties with white flowers, with straw-coloured flowers, with pale blue flowers, with blush-coloured flowers, with yellow variable flowers, with blue variable flowers.

The second species has the scape simple, round, grooved, a span high: the leaves alternate, sheathing, upright, very finely striated, obscurely waved: the corolla the largest of all the species, very thin: the claws of the larger petals purple on the outside, dotted and streaked with purple within; border suborbiculate, waved, bent in at top, upright: border of the smaller petals ovate, bent down, with the edge frequently bent back, blunt, of the same colour with the larger ones, but shorter and narrower; the claws bearded within from the flexure to the base with brownish-yellow cilia. It flowers at the end of May or beginning of June, and is a native of the Levant.

The third has the scape round, striated, simple, upright, a foot

high and more, bearing two or three flowers: the leaves nerved, sub-falcated, obscurely curved on the outer edge: the lower petals connate at the base: the claws of the larger ones thickish, with a thin winged edge, an inch long, green on the outside, bearded within, with white cilia, yellow at the top: border blunt, emarginate, an inch wide, a little more in length, hanging down, white, striated near the flexure: smaller petals oblong, from upright bent in with a reflex margin, blunt, emarginate, white: claws thickish, attenuated, greenish. It is a native of the South of Europe, flowering in May and June.

The fourth species has the scape simple, striated, longer than the leaves, a span in height, sustaining two or three flowers, sometimes four: the leaves subfalcated, acute, striated, from erect patulous: the petals violet-coloured, entire: capsule cylindric, with three streaks. It is a native of Portugal, flowering in April and May, and again in autumn, whence the name.

The fifth has three or four large bright purple flowers, which stand above each other, and have purplish sheaths: the three bending petals or falls are striped with white from the base to the end of the beard: the capsules are large, blunt, and triangular. It flowers at the end of May. Its native place is unknown.

The sixth species has the scape striated, scarcely longer than the leaves, a foot and more in height: leaves acute, striated, upright; the lower ones the length of the scape, but the upper ones gradually shorter: the flowers at the top of the scape divided, alternate, coming out successively, handsome, yellow, netted with black: the upper part of the stem is naked, and divides into three branches, each of which has two or three flowers one above another: the three upright petals or standards are yellow, and the bending petals or falls are variegated with purple stripes. It flowers in June, and is a native of Hungary.

The seventh has the scape divided at top, larger than the leaves: the leaves reflex-falcated, nerved, an inch wide: the flowers blue, with the smaller petals quite entire, having an agreeable scent: the stalks rise near four feet high, and divide into several branches, each

supporting three or four flowers, which are covered with a thin sheath; the three bending petals or falls are of a faint purple inclining to blue, with purple veins running lengthwise: the beard is yellow, and three erect petals or standards are of a bright blue, with some faint purple stripes. It is a native of Germany, flowering in May and June.

The eighth species has the scape divided at top, longer than the leaves, two (or three) feet high: the leaves inflex-falcated at top, striated, the upper ones gradually shorter. It resembles the seventh, from which it differs in having the larger petals of a deeper violet colour, and sub-emarginate; the smaller petals emarginate, and of a deeper blue colour: the stigmas acute and serrate, with a blueish keel. It derives the trivial name from the smell of the flowers, which is very like that of Elder in bloom. It flowers at the end of May, and in June, and is a native of the South of Europe.

In the ninth, the roots are very thick, fleshy, and divided into joints, spreading just under the surface of the ground: they are of a brownish colour on their outside, but white within: the leaves rise in clusters, embracing each other at their base, but spread asunder upwards in form of wings: they are a foot and a half long, and two inches broad, having sharp edges, ending in points like swords: the stalks between these, which are a little longer than the leaves, having at each joint one leaf without a foot-stalk; these diminish in their size upwards: the stalks divide into three branches, each of which produces two or three flowers one above another at distances, each enclosed in a sheath: they have three large violet-coloured petals which turn backward, and are called falls: these have beards near an inch long on their midrib towards their base, and have a short arched petal which covers the beard, with three broad erect petals of the same colour, called standards: the stamina lie upon the reflexed petals. It flowers in June. It is a native of the South of Europe.

There are varieties with blue standards and purple falls, with pale purple standards, with white standards, and with a smaller flower.

The tenth species has a tuberous, creeping root: the stems seve-

ral, short, inclining upwards, compressed, leafy: the leaves scarcely six inches long, sharpish, a little curved like a sickle at the tips, entire, with a pale membranaceous margin: the flower generally solitary, a little shorter than the leaves, erect, of a pale purplish blue: outer petals drooping, obtuse, blue, with deeper blue spots, crested in the place of the beard with three longitudinal, elevated, waved ribs, variegated with orange and yellow; inner petals narrower, pointed, uniform in colour. It is a native of North America; flowering in May.

In the eleventh species, the bulb is the size of a hazel nut: the scape simple, round, jointed, upright, bearing one or two flowers, a foot and half in height: the leaf single, nerved, upright, with the tip hanging down, two feet long: the border of the larger petals white, suborbiculate, with a point; claws green on the outside, yellow within, dotted with black: the smaller petals several times shorter and less: claws convex on the outside, green, concave within, dotted with brown, the length of the larger ones, but narrower; segments lanceolate, divaricating, a line in length, the middle one of the three a little longer, white dotted with brown. It is a native of the Cape.

It varies in the shape of the larger petals, and much in the colours, as blue, purple, yellow, white, and spotted.

The twelfth has the leaves channelled and convoluted, not only at the base, as in the other species, but the whole length of them; they are awl-shaped at the tip, and shorter than the scape: the flowers are blue, with emarginate petals. It is a native of the South of Europe.

There are varieties with blue flowers, with violet-coloured flowers, with white flowers, with purple flowers, with yellow flowers, with blue standard petals and white falls, with blue standards and yellow falls, with striped flowers, the broad-leaved with blue flowers, the broad-leaved purple-flowered, the sweet-scented blue-flowered, the sweet-scented purple flowered, with variegated sweet-scented flowers, and the double-flowered.

The thirteenth has a fleshy root, the thickness of the thumb,

spreading horizontally near the surface, blackish on the outside, reddish, and spongy within, the upper part covered with numerous ridged fibres, the lower part sending down many long, whitish, wrinkled, stringy roots: the leaves from the root two or three feet long, upright, an inch or more in breadth, striated, having a prominent longitudinal midrib, equal to the scape, deep green, smooth: stem-leaves shorter, forming a sheath at the bottom: scapes from one to three feet in height, upright, alternately inclined from joint to joint, round or flatted a little, smooth and spongy: the peduncles axillary, flat on one side, and smooth; each sustaining two or three flowers, the two outer (when there are three) having one sheath, and middle flower two. It is common in most parts of Europe; flowering at the end of June, or the beginning of July.

The fourteenth species has a thick, tufted, fibrous root: the leaves grass-green, when broken emitting a strong odour, not much unlike that of hot roast beef at the first scent. They are acute and nerved, rather shorter than the scape; which is single, cylindrical, but angular on one side, jointed, sheathed with alternate spathaceous leaves, two feet high, bearing several flowers. It is a native of France, &c.

The fifteenth has the root white within, black without, the thickness of the thumb, having white fibres, and bristly at top, with the remains of leaves: the scape compressed, upright, jointed, sheathed with alternate leaves, many-flowered, the length of the leaves, or a little higher, a foot in length: the leaves narrow, sharp, curved-in at the tip, nerved and smooth, as is the whole plant: the spathes membranaceous, acute, brownish, shorter than the peduncles, very thin at the edge and tip: the peduncles two or three inches long, round, slender, upright, one-flowered: the flowers elegant, but without scent: claws of the outer petals channelled, green on the outside, yellow on the inside, streaked with dark purple: border flat, rounded-ovate, blunt, quite entire, pale at the base, then blue with deep-blue streaks: inner petals spatulate, blunt, upright, shorter, bluer and streaked. It is a native of Virginia, flowering here in June and July.

The sixteenth species has the scape jointed, bifid at the top, or

simple, many-flowered, higher than the leaves, two feet in length: the leaves alternate, sheathing; the upper ones gradually shorter: the flowers blue, large. Mr. Curtis remarks, that it has, for the most part, a stalk unusually crooked or elbowed. It is a native of North America, flowering in May and June.

The seventeenth has the scape round or roundish, covered with the sheaths of leaves, many-flowered, longer than the leaves, a foot high: the leaves falcated, acute, striated, nerved: spathes membranaceous at the edge: the larger petals dilated at the base with dusky veins; lesser snowy-white, with yellowish veins at the base: stigmas snowy-white. From its being the highest of the species of *Iris* cultivated in gardens, Mr. Curtis has named it *Tall Iris*. It is a native of the Levant, flowering in July.

The eighteenth species has tufted fibrous roots, from which arise many grass-like leaves about nine inches long; from between them come out the stalks, which are shorter than the leaves, and support one purple flower with blue standards. It flowers in May, and is a native of North America.

The nineteenth has an oval bulbous root, from which come out five or six pale-green leaves, hollowed like the keel of a boat, about six inches long, and one inch broad at the base, ending in points: between these the flower-stalk arises, which is seldom above three inches high, supporting one or two flowers, enclosed in spathes: these have erect petals or standards, of a pale sky-blue colour, and three reflexed petals or falls, which on their outside are of the same colour, but the lip has a yellow streak running through the middle, and on each side are many dark spots, with one large deep-purple spot at the bottom: the leaves are striated and nerved, unequal, and a span in length. It is a native of Persia.

This is greatly esteemed for the beauty and extreme sweetness of its flowers, as also for its early appearance in the spring, being generally in perfection in February or the beginning of March, according to the season.

Martyn observes, that "like the Hyacinth and Narcissus, it will blow within doors in a water-glass, but stronger in a small pot of

sand or sandy loam, and a few flowers will scent a whole apartment."

The twentieth species has narrow, flat, glass-like leaves, about a foot long, of a light-green colour; between these arise the stalks about six inches high, having two narrow leaves much longer than the stalks: the flowers two or three, small: the petals have a broad yellow line with purple stripes; the three falls are of a light purple colour striped with blue, and have a convex ridge running along them: the others are of a reddish purple variegated with violet; they have a scent like fresh plums. It is a native of Austria, flowering in June.

The twenty-first has a knobbed root, blackish on the outside, whitish within, with long pale fibres: the stem round, very slightly compressed, straight or a little flexuose, from two to three feet in height, taller than the leaves: the flowers commonly two, on short peduncles, each involved in its spathe; sometimes there are three; they have no scent: the colour blue-purple; but under the stigmas the reflex petals are more inclined to red: upright petals flat, and usually quite entire. According to Miller, the flowers have light blue standards, and purple variegated falls, having a broad white line in the middle instead of the beard. It is a native of Germany, &c. flowering in July.

The twenty-second species has a higher stem, the scape a foot high or more, dividing at top, three-flowered or many-flowered, longer than the leaves; which are nerved and flat: the flowers blue, in brown scariose spathes: the inner petals are upright: the germ trigonal, not grooved at the angles. It is a native of Siberia, &c. flowering in May and June.

The twenty-third has a solid sub-bulbose root, surrounded by whitish fibres, and throwing out other tubers: the stem upright, roundish, two feet high, simple: the root-leaves acuminate, quite entire, somewhat rigid, distich, flat, keeled at the base, above simple, from upright spreading, few: the flowers few, coming out successively from the same spathe, yellow, without scent, peduncled: the petals have a black shining glandular hole or pit, like that which is

common to several species of *Ranunculus*. It is a native of Martinico; flowering in November and December.

The twenty-fourth species has the scape round, jointed, villose, simple, a foot high, sustaining one or two flowers: the leaf somewhat channelled, striated, villose, the length of the scape: the spathes acute, striated, smooth, two inches long: the peduncles subancipital, one-flowered, smooth: all the petals united at the base: the three outer several times bigger than the others, ovate, obtuse entire; the three inner much narrower and shorter by half, lanceolate, acute. This beautiful flower is orange-coloured, with black spots and dots at the base, and a heart-shaped blue spot above the base, which at bottom is tomentose and black. It is a native of the Cape.

The twenty-fifth has a tuberous root; there arise from it five or six long narrow four-cornered leaves, and from between these the stalk, supporting one small flower, of a dark purple colour. It flowers in April, but does not produce seeds in this climate. It is a native of the Levant.

Culture.—Most of the sorts may be readily increased, by parting the roots or separating the off-sets from the bulbs, and planting them out in the situations where they are to flower; the first sort in the autumn, or very early in the spring, and the latter in the close of summer, when the leaves decay, managing them in the same manner as other bulbs. As they increase and spread rapidly in their roots, they should be divided and taken off every two or three years.

New varieties of the different sorts may be raised from seed, by sowing it in the autumn in a bed of light sandy mould. The plants come up in the following spring, and in the autumn may be transplanted where they are to grow. They flower a year or two afterwards.

The bulbous-rooted sorts succeed best in such soils as are of the light, sandy, loamy kind.

The last sort answers most perfectly in such aspects as are towards the east, the roots being prevented from going too deep.

As the second sort is liable to be injured by severe winters, a

few should be planted in pots to have protection. This sort is well suited for forcing.

When planted in the open ground, it requires a rather dry soil and situation.

The Cape sorts should be retained in the dry stove, and be propagated and managed in the same manner as other bulbous-rooted plants of the same kind.

All the sorts are proper for affording variety in the borders, clumps, and other parts of pleasure-grounds; and some of the more tender sorts among potted plants of similar growths.



Painted by Syd Edwards

London Published Jan 11806 by G. Kearsley, Fleet Street

Engraved by F. Sanford.

Kalmia glauca
 1 *Glaucus Kalmia*.

Linum arboreum.
 2 *Tree Flax*

PLATE XXXI.

1. KALMIA GLAUCA.

GLAUCOUS KALMIA.

THIS genus contains plants of the hardy evergreen shrubby kind.

It belongs to the class and order *Decandria Monogynia*, and ranks in the natural order of *Bicornes*.

The characters are: that the calyx is a five-parted perianthium, small, permanent: segments subovate, acute, rather columnar: the corolla one-petalled, salver-funnel-form: tube cylindric, longer than the calyx: border with a flat disk; the margin upright, half-five-cleft: ten nectariferous hornlets projecting outwardly from the corolla, and surrounding it where the border of it is upright: the stamina have ten awl-shaped filaments, upright-spreading, rather shorter than the corolla, inserted into the base of the corolla: anthers simple: the pistillum is a roundish germ: style-thread-form, longer than the corolla: bent down: stigma obtuse: the pericarpium a capsule, subglobose, depressed, five-celled, five-valved, five-partite: the seed numerous.

The species cultivated are: 1. *K. latifolia*, Broad-leaved Kalmia; 2. *K. angustifolia*, Narrow-leaved Kalmia; 3. *K. glauca*, Glaucous Kalmia; 4. *K. hirsuta*, Hairy Kalmia.

The first rises with a branching stalk to the height of ten or twelve feet, with very stiff leaves, which are two inches long and one broad; of a lucid green on their upper side, but of a pale green on their under: they have short foot-stalks, and stand without order round the branches: between these the buds are formed for the next year's flowers, at the extremity of the branches; these buds swell during

the autumn and spring months, till the beginning of June, when the flowers burst out from their empalements, forming a round bunch, or corymbus, sitting very close to the branch: they are of a pale blush colour, the outside of the petal a peach colour. In its native soil it continues flowering a great part of the summer, and is highly ornamental. It is a native of Carolina.

The noxious qualities of this elegant shrub lessen its value.

The second species rises from three to six feet high, dividing into small woody branches, which are very close, and covered with a dark-gray bark: the leaves are stiff, about two inches long, and half an inch broad, of a lucid green, placed without order upon the branches, on slender foot-stalks: the flowers are in loose bunches on the side of the branches, upon slender peduncles: they are bright red when they first open, but afterwards fade to a blush or peach-bloom colour.

There are varieties, with pale and deep-red flowers, differing in their habit: the latter, the most humble of the two, not only produces the most brilliant flowers, but in greater abundance. It is reputed poisonous to sheep and cattle in North America, where it is a native.

The third is much inferior in size to the first, rarely exceeding two feet in height. It is a native of Newfoundland, flowering in April and May.

The fourth species is usually in height from two to three feet, growing upright: the flowers are about the same size with those of the preceding, are of a purple colour, and grow in racemes: the stalk, leaves, and calyx are covered with strong hairs. It is a native of Carolina.

Culture.—These plants are increased by seeds, layers, and suckers.

The first sort is mostly raised from seeds procured from America, which should be sown in pots or boxes of light sandy mould, in the spring, plunging them in an easterly border, or in beds of light mould in the same aspect. When placed on a gentle hot-bed they succeed better. They must, however, be inured to the full air in summer, being sheltered during the winter from frost. When the

plants have had two years' growth, they may be removed into separate pots, to be continued two or more years, when they may be planted out in the open ground in warm situations.

The second sort is mostly increased by layers, which should be made from the young shoots, and laid down in the early autumn. When they are well rooted, in a year or two, they may be taken off, and planted in pots separately filled with bog earth, or in a warm border of the same sort of earth. This is more hardy than the former.

The third sort is increased in the same way as the first, and requires similar management.

The fourth is preserved with difficulty in this climate, but may be raised by layers.

The most of the plants may likewise be increased by suckers, which should be taken off and planted in the spring, in nursery rows, for two or three years, when they may be removed to the places where they are to grow.

These plants, in the more hardy sorts, afford ornament and variety in the fronts of shrubbery borders and clumps; and in the more tender sorts, among other potted green-house plants.

2. LINUM ARBOREUM.

TREE FLAX.

THIS genus contains plants of the herbaceous, annual, and perennial shrubby kinds.

It belongs to the class and order *Pentandria Pentagynia*, and ranks in the natural order of *Gruinales*.

The characters are: that the calyx is a five-leaved lanceolate perianthium, upright, small, permanent: the corolla funnel-form: petals five, oblong, gradually wider above, obtuse, more spreading,

large: the stamina have five awl-shaped filaments, upright, length of the calyx (also five rudiments, alternating): anthers simple, arrowed: the pistillum is an ovate germ: styles five, filiform, upright, length of the stamens: stigmas simple, reflex: the pericarpium a globose capsule, rudely pentagonal, ten-valved, gaping at the tip: partitions membranaceous, very thin, connecting the valves: the seeds solitary ovate-flattish, acuminate, smooth.

The species are: 1. *L. usitatissimum*, Common Flax; 2. *L. perenne*, Perennial Flax; 3. *L. suffruticosum*, Shrubby Flax; 4. *L. arbo-reum*, Tree Flax; 5. *L. Africanum*, African Flax.

The first has an annual, simple, fibrous, pale brown root: the stem upright, eighteen inches, two feet, and even more in height, round, smooth, leafy, branched only at top: the leaves are sessile, growing close together, almost upright, perfectly entire: the flowers large, growing in a panicle, on round smooth peduncles: the calycine leaflets ovate-keeled, with a membranous edge, when magnified appearing to be fringed with hairs: the petals wedge-shaped, deciduous, sky-blue, streaked with deeper-coloured lines; white at the claws, and somewhat gnawed at the tip. It is a native of Egypt, flowering in June and July.

It may be said to be one of the most valuable plants in the whole vegetable kingdom; as from the bark of its stalks is manufactured flax or lint, for making all sorts of linen cloth; from the cloth, when worn to rags, is made paper: and from the seeds of the plant linseed oil is expressed, which is much used by painters, and in other arts; and the refuse, after expression, forms the oil-cakes so valuable in the fattening of cattle and sheep.

In the second species, from its perennial root rise three or four inclining stalks, having short narrow leaves towards their base, but scarcely any about the top: the flowers are produced at the ends of the stalks, sitting very close; they are blue, and about the size of the cultivated sort, being succeeded by pretty large round seed vessels, ending in acute points. Its flowers appear from June to August, and are of a delicate texture and very elegant blue colour, and the roots continue four or five years.

There is a variety which is procumbent, with smaller flowers.

The third has a shrubby stalk a foot high, sending out several branches: the leaves very narrow, coming out in clusters, but on the flowering branches broader and longer: the flowers at the ends of the branches, erect, on long slender peduncles: the calyxes acute-pointed: the petals large, entire, white, but before the flowers open pale yellow: they appear in July, but the seeds seldom ripen in this climate: the flowering stalks decay in the autumn, but the lower shrubby part continues with the other branches all the year. It is a native of Spain, &c.

The fourth species forms, if not a tree, as its name implies, a shrub of the height of several feet: it begins to flower in March, and continues flowering to the close of summer; but has not yet produced seeds in this climate. It is a native of the island of Candia.

The fifth has a suffruticose stiff stem, a foot high, round, with simple branches: the leaves are sessile, upright, even, generally shorter than the internodes: the flowers in a terminating umbel, which is four or five cleft, with dichotomous rays: the petals are yellow with villose claws, and turning tawny: the calyx acuminate and rugged at the edge. It is a native of Africa, flowering in June and July.

Culture.—These plants may be increased by seeds and layers, or cuttings.

The two first sorts are raised by sowing the seeds in the early spring months, as March or the following month, the former in fields or plantation-grounds, where the soil is fresh, good, and well reduced into order by frequent digging over, or ploughing and harrowing, in narrow drills, or broadcast, and raked or harrowed in with a light harrow; the plants being afterwards kept perfectly clean from weeds by repeated hoeings.

Towards the end of August, when the plants have attained their full growth, and begin to turn yellow at bottom, and brown at top, and their seeds to ripen, it is proper time to pull them; though, if it

were not for the sake of the seed, they might be pulled a little before the seeds ripen, by which the flax is generally better coloured and finer; but if suffered to stand till the seeds are fully ripe, it is commonly stronger, somewhat coarser, and more in quantity. It should be pulled up by handfuls, roots and all, shaking off all the mould; then either spreading them on the ground by handfuls, or binding them in small bunches, and setting them upright against one another, for ten days or a fortnight, till they are perfectly dry, and the seed fully hardened, then housed, and the seed thrashed out, cleaned, and placed in a dry airy situation, being afterwards put up for use. The flax, after being rippled and sorted, should be carried to a pond of nearly stagnant water, being placed in it with the bundles crossing each other in different directions, so as to keep the whole in a close compact state, being kept just below the surface of the water, by proper weights applied upon it. It should remain in this steep till the stems become brittle and the bark readily separates, when it must be taken out and spread thinly on a short pasture, being occasionally turned until it becomes perfectly bleached and dry, when it is in a proper state for the purpose of being converted into flax.

The latter, or perennial sort, should be sown in a bed or border of good earth, in shallow drills at the distance of six inches; and when the plants are two or three inches in height they should be thinned to the same distances, and in autumn be planted out in the places where they are to grow. But it is probably a better practice to sow them at once in the places where they are to grow, thinning them out properly afterwards.

The three other sorts may be best increased by planting cuttings of the branches in pots of light fresh earth, plunging them in the tan hot-bed, or by layers laid down in the later summer months. When the plants in either mode have stricken good root, they may be removed into separate pots, and be managed as other tender exotic plants that require the protection of the greenhouse.

They may likewise be raised from seeds when they can be procured, which should be sown in pots and placed in a hot-bed in the spring season.

A few plants of the two first sorts may be introduced in the clumps and borders of the pleasure-ground; and the three other sorts afford variety in green-house collections among other potted plants.

PLATE XXXII.

1. HELIANTHUS MULTIFLORUS.

PERENNIAL SUN-FLOWER.

THIS genus contains plants of the hardy herbaceous flowery kinds.

It belongs to the class and order *Syngenesia Polygamia Frustranea*, and ranks in the natural order of *Compositæ Oppositifoliæ*.

The characters are: that the calyx is common imbricate, somewhat squarrose, expanded; scales oblong, broadish at the base, gaping every where at the tips: the corolla compound radiate: corollets hermaphrodite, very numerous in the disk: females fewer, much longer in the ray: proper of the hermaphrodites cylindric, shorter than the common calyx, bellying at the base, orbicular, depressed: border five-toothed, sharp, spreading: of the females ligular, lanceolate, quite entire, very long: the stamina in the hermaphrodites consist of five filaments, curved, inserted below the belly of the corollet, the length of the tube: anther cylindric, tubular: the pistillum in the hermaphrodites is an oblong germ: style filiform, length of the corollet: stigma two-parted, reflex: in the females, germ very small: style and stigma none: there is no pericarpium: unchanged calyx: seeds in the hermaphrodites solitary, oblong, blunt, four-cornered, compressed at the opposite angles; the inner ones narrower, crowned with two lanceolate, acute deciduous chaffs; in the females none: the receptacle chaffy, large, flat: chaffs lanceolate, acute, two separating each seed, deciduous.

The species cultivated are: 1. *H. annuus*, Annual Sun-flower; 2. *H. indicus*, Dwarf Annual Sun-flower; 3. *H. multiflorus*, Perennial Sun-flower; 4. *H. tuberosus*, Tuberous-rooted Sun-flower, or Jerusalem Artichoke.



Painted by Syd Edwards.
Helianthus multiflorus
 1 Perennial Sun-flower

London Published July 1st 1895, by C. Kearley Fleet Street

Engraved by F. Sampson
Hedysarum obscurum
 2 Creeping rooted Hedysarum

There are several other species of the perennial sort that may be cultivated.

The first has an annual root: the stem single or branched, from five or six to ten or fourteen feet in height, and in hot climates twenty or more; when vigorous, the size of a man's arm: the leaves are alternate, a span or a span and a half in length, and almost as much in breadth, rough, serrate, acuminate, hanging down at the end, on long petioles: the flower single (sometimes several), nodding, a foot or more in diameter. It is a native of Mexico, flowering from June to October. Martyn observes, that as to its turning with the sun, it is a vulgar error; Gerarde could never observe it; and he has seen four flowers on the same stem pointing to the four cardinal points.

There are varieties with double flowers, deep yellow, and sulphur-coloured.

The second species is perhaps only a variety of the first, though constant; but the leaves are convex above in the disk, and of a darker green. The peduncles are less thickened at top, or rather of an equal thickness every where, whence the flowers nod less. The scales of the calyx, except the inmost row, grow out into petioled pendulous leaflets. It grows only from eighteen inches to three feet in height. It probably comes from Mexico or Peru.

The third has the stem and peduncles scabrous: the leaves cordate-ovate: the calyxes loosely imbricate, neither squarrose nor drooping, consisting of forty to fifty scales: the stems many, upright, from five or six feet to eight or nine in height, branching, the stem and each branch terminated by a flower, the principal one sometimes nine or ten inches in diameter, the lateral ones gradually smaller: the leaves some opposite, others alternate. There is a constant succession of flowers from July to November. It is a native of Virginia.

In the fourth species the stems are several, rough, hairy, streaked, from eight, ten, or twelve to sixteen feet in height, the size of a child's arm: the leaves alternate, light green, rough, pointed, eight

inches broad, and ten or eleven inches long, deeply serrate, smaller towards the top: the branches many, long, from bottom to top: the flowers terminating, small; florets in the ray twelve or thirteen. These seldom blow before October, and in some seasons they do not expand at all. The seeds never ripen here: the roots creeping; with many tubers clustered together, thirty, forty, or fifty from one plant; measuring a peck, or in good soils half a bushel; they are, like the common potatoe, red on the outside, and very irregular in their shape, the size of a man's fist in the largest. It is a native of Brazil.

Culture.—All these flowery plants are easily increased, the two first sorts by seeds, and the others by dividing their roots.

The seeds should be sown in the early spring months, in the places where the plants are to grow and flower, in patches of three or four seeds together. When the plants are up they may be thinned out to one or two of the best.

They may be had more forward by sowing them on a moderate hot-bed, under glasses, and afterwards transplanting them to the situations where they are to grow.

The divided roots may be planted out in the places where they are to remain, either in the autumn or the early spring months.

These plants produce a fine ornamental effect in the back parts of the borders, clumps, and other parts of pleasure-grounds, and by sowing at different times may be kept in flower for a considerable length of time.

In the perennial sorts the decayed stems should be cleared away when they begin to decline. They continue long.

The last, or tuberous-rooted sort, is increased by planting the smaller roots, or the larger ones cut in pieces, a bud being preserved to each, either in the spring or autumn, allowing a good distance, as the roots multiply greatly. In the autumn following, when the stems decay, the roots may be taken up for use.

When cultivated for a crop, the sets should be planted in an open part of the kitchen-garden, in rows three feet or more asunder, and at least eighteen inches distant from each other, to the depth of

four or five inches. The best time is the later end of March, in a light soil. The roots may be taken up for use in September, and the whole crop housed in October. When kept in sand in a dry place, they continue the whole winter very good.

2. HEDYSARUM OBSCURUM.

CREEPING-ROOTED HEDYSARUM.

THIS genus contains plants of the herbaceous flowering kind.

It belongs to the class and order *Diadelphia Decandria*, and ranks in the natural order of *Papilionaceæ*.

The characters are: that the calyx is a one-leafed perianthium, half-five-cleft: clefts subulate, upright, permanent: the corolla is papilionaceous, streaked: banner reflex-compressed, ovate-oblong, emarginate, long: wings oblong, narrower than the other petals, straight: keel straight, compressed, broader outwardly, transversely blunt, from the base to the swelling part bifid: the stamina have diadelphous filaments, (simple and nine-cleft,) bent in at a right angle: anthers roundish, compressed: the pistillum is a slender germ, compressed, linear: style subulate, bent in with the stamens: stigma very simple: the pericarpium is a legume with roundish, compressed joints, two-valved, and containing one seed: the seed kidney-shaped and solitary.

The species chiefly cultivated are: 1. *H. Alhagi*, Prickly Hedysarum; 2. *H. Canadense*, Canadian Hedysarum; 3. *H. gyrans*, Sensitive Hedysarum; 4. *H. coronarium*, Common Hedysarum, or French Honeysuckle; 5. *H. flexuosum*, Waved-podded Hedysarum; 6. *H. humile*, Dwarf Hedysarum; 7. *H. spinosissimum*, Prickly Hedysarum.

The first has the stems shrubby, about three feet high, branching out on every side; the leaves are shaped like those of broad-leaved

Knot-grass, very smooth, of a pale green colour, on short foot-stalks. Under these come out thorns, near an inch long, of a reddish brown colour. The flowers come out from the side of the branches in small clusters, are of a purple colour in the middle, and reddish about the rims. It is a native of the Levant.

The second species is an upright plant, and mostly smooth: the stem streaked and angular: the leaflets are lanceolate: the stipules awl-shaped. It is perennial, and a native of Virginia, &c. flowering in July and August.

The third has a branching perennial root (biennial, annual): the stem shrubby, three feet high, wand-like, upright, very smooth, round, without knots: the leaves are alternate, petioled, hanging down or spreading, often vertical, sometimes simple, but usually ternate, especially in adult plants: the middle leaflet lanceolate, long, flat, quite entire, very smooth, veined; the side ones very small, and seeming rather to be appendices than leaflets; they are on short petioles, which are remarkable for a motion peculiar to them. The flowers many and nodding. It is a native of Bengal.

The fourth species has a biennial root: the stems from two to three feet high, hollow, smooth, and branching: the leaves are composed of five or six pairs of oval leaflets, terminated by an odd one: they are alternate, and from the angles which they form with the stem and branches, peduncles come out five or six inches in length, sustaining spikes of beautiful red flowers, which open in June and July, and perfect seeds in September. It is a native of Spain, &c.

There is a variety with white flowers.

The fifth species is annual, and has some resemblance to the foregoing, but is much smaller: the stalks rise near a foot high, and the leaves are composed of two or three pairs of ovate leaflets, terminated by an odd one: the flowers come out in spikes at the top of the stalks, and are of a pale red, intermixed with a little blue. They appear in July, and are succeeded by jointed pods. It is a native of the Levant.

The sixth has a perennial root: the stems half a foot in length, usually with one branch and leaf only: the leaflets obovate-oblong,

villose underneath: the spike ovate. It is a native of the South of France, &c. flowering in July and August.

The seventh is an annual plant: the leaflets four or five pairs, with an odd one, narrow and oblong: the stem terminated by small spikes of purple flowers, which are succeeded by small rough legumes. It is a native of Spain, &c.

Culture.—All these plants are capable of being raised by sowing the seeds in the early spring.

In the first sort they should be sown in pots of light earth, and plunged in a moderate hot-bed. When the plants are of some growth they should be removed into separate pots, and be replunged into a very moderate hot-bed, being properly shaded till they are well rooted. They should afterwards be gradually inured to the open air, being protected in winter as there may be occasion.

The seeds are often long in coming up.

In the second sort the seed may be sown in the early spring, as April, on a bed of light fresh earth, or where they are to remain. In the first case they should be removed where they are to grow in the autumn. These plants should not be often removed afterwards.

The third sort is raised in the same manner as the first, and should have free air in the summer, and be protected occasionally in the winter.

The other sorts are all increased in the same manner as the second, being pricked out while young, and in the autumn removed to the places where they are to grow and flower.

As the biennial sorts either decay or dwindle after flowering, they should be raised in fresh supplies every year from seed.

These plants are very ornamental in the beds, borders, clumps, and other parts of pleasure-grounds, and some of them among other potted plants.

PLATE XXXIII.

1. LAVATERA TRIMESTRIS.

ANNUAL LAVATERA.

THIS genus contains plants of the herbaceous shrubby perennial kinds.

It belongs to the class and order *Monadelphia Polyandria*, and ranks in the natural order of *Columniferae*.

The characters are: that the calyx is a double perianthium: exterior one-leafed, trifid, obtuse, short, permanent: interior one-leafed, half five-cleft, more acute, more erect, permanent: the corolla has five obcordate flat petals, spreading, affixed below to the tube of the stamens: the stamina have numerous filaments, coalescing below into a tube; loose above (gaping at the tip and surface of the tube): anthers reniform: the pistillum is an orbicular germ: style cylindric, short: stigmas several (seven to fourteen), bristly, length of the style: the pericarpium is an orbicular capsule, composed of as many cells as there are stigmas, bivalve, and articulated in a whorl round the columnar receptacle, at length falling off: the seeds solitary and reniform.

The species cultivated are: 1. *L. Cretica*, Cretan Lavatera; 2. *L. trimestris*, Common Annual Lavatera; 3. *L. Thuringiaca*, Great-flowered Lavatera; 4. *L. arborea*, Tree Lavatera, or Mallow; 5. *L. Olbia*, Downy-leaved Lavatera; 6. *L. triloba*, Three-lobed Lavatera; 7. *L. Lusitanica*, Portuguese Lavatera.

The first has an annual fibrous root of thick fibres, a foot in length, with innumerable other capillary fibres: the stem round, rugged, five feet high, branched: the leaves on long petioles, very soft, tomentose, toothed, seven-angled, the angles of the upper ones



Painted by Syd. Edwards

London Published Sept^r 1835 by G. Kearsey Fleet Street

Engraved by F. Sanford

Lavatera Trimestris
 1 Annual Lavatera

Lathyrus Sativus
 2 Blue flowered Lathyrus

sharper: the stipules lanceolate, ciliate, bowing at bottom and then erect: the flowers axillary, about four together, on upright peduncles: the outer calyx cup-shaped, with ovate segments: inner a little longer, five-cornered above, with lanceolate segments: the corolla twice the length of the calyx, pale blue, with oblong, emarginate petals: the germ orbicular-flattened, ten-grooved: the stigmas ten: the fruit smooth, within the calyx: the capsules ten, round a column terminated by a hemisphere with a very small point at top, disappearing when the fruit is ripe, and leaving a hole in the middle of the capsules, which then turn black. It is a native of the island of Candia or Crete, flowering in July.

It varies with red flowers, with white flowers, and with purple flowers.

The second has also an annual root, white, with spreading beards: the stem round, two feet high, branched, the lower branches almost horizontal: the leaves crenate-toothed, smooth, on long petioles, gradually narrowed towards the tip: stipules ovate-lanceolate, ciliate, bowed at bottom and then straight: the flowers solitary, axillary, on peduncles shorter than the petiole: outer calyx semi-trifid, with keeled segments; inner larger, with lanceolate segments, curled at the edge: the corolla large, spreading, bell-shaped, pale-flesh-colour, with whitish lines: petals broader above, crenate, frequently rolled up, the edges of the claws deep purple: the germ very smooth: the style multifid: the stigmas pale-flesh-coloured, longer than the tube, thirteen to eighteen: the fruit hemispherical, convex beneath, covered at top with a circular concave, smooth lid or peltate umbrella: there are about twenty capsules in a whorl; they are brown, closed all round and not opening, with a longitudinal raised line along the back, elegantly marked on the sides with flexuose streaks drawn from the circumference to the centre: the seeds are ferruginous. It is a native of the south of Europe, &c. flowering from July to September.

There are several varieties.

The third has the stem five or six feet high, woolly, branched: the lower leaves heart-shaped, crenate, roundish-lobed: upper hastate,

on short petioles: the stipules lanceolate: the flowers axillary, solitary, peduncled; peduncles longer than the leaf: the calyxes subtomentose: the segments of the outer heart-shaped, with a very sharp point; of the inner oblong acute: the corolla large, spreading, pale violet or purplish, shaped like those of the Marsh-mallow, but larger: petals emarginate: the capsules about twenty (fourteen) in a wing of a papery substance, somewhat sugged, about a columnar receptacle, which has many wings from the permanent sides of the capsules, like the cogs of a mill-wheel, ending in a conical awl-shaped point: the seeds flatted a little, smooth, subcinereous or brown. It is a native of Sweden, flowering from July to September.

The fourth species rises with a strong thick stalk the height of eight or ten feet (in gardens), dividing into many branches at the top: in its wild state, when largest, from four to six feet high, and as much as four inches in diameter: the leaves are alternate, numerous, cordate, roundish-seven-angled (some five, and others three-angled), the angles blunt, soft as velvet, shorter than the petioles: the stipules short, smooth, acuminate at the tip, broad at the base: the flowers mostly in pairs, sometimes three together, on upright peduncles an inch and a half in length: the outer calyx ovate at the base, divided half way into three broad blunt segments; inner only half the size, divided half way into five sharp segments: the corolla purplish red, with dark blotches at the base, spreading bell-shaped (like that of the common Mallow), an inch or more in diameter: the petals broader at top, narrow at the base, so that the calyx appears between the claws: the cylinder of filaments purple, woolly at the base: the germ very smooth: the style usually eight cleft at top: the stigmas revolute, reddish: the ring or whorl of fruits is seven or eight, capsuled: the common receptacle awl-shaped, with a conoid globule at top, and small crescent shaped lamellæ at the base and the interstices of the capsules: the capsules are reniformed-rounded, sharply three-cornered, membranaceous, wrinkled, closed on all sides, pale bay-coloured, not opening: the seeds kidney-shaped, and ash-coloured. It is a native of Italy, &c. flowering from June or July to September or October.

The fifth has a round branched stem, five feet high, villose at top, reddish: the leaves soft, whitish, tomentose, unequally serrate; the lower subcordate-hastate, five-angled; the upper ovate, three-cusped, the middle lobe narrowed, acute, oblong: the stipules ovate-lanceolate, villose: the flowers on short peduncles, axillary, solitary, very seldom two together; terminating ones in a spike: the outer calyx ovate, with roundish-acute segments; inner larger, with lanceolate-acute segments: the corolla large, spreading very much, reddish-purple: the petals with narrowed claws, covered with white hairs, inserted into a flesh-coloured tube: the stamens purple: the germ roundish-compressed, with twenty grooves: the style divided into about twenty parts: the stigmas long, recurved: the capsules about twenty, black, smooth, fixed in a ring about a thick striated cone: when the seeds are ripe, that part which is next to the axis appears naked, on account of the pellicle which forms the internal part of the capsule adhering to the axis. According to Linnæus, the leaves of the first year are very large, and those of the following much smaller, which is a circumstance common to this with other plants of the same natural order. It is a native of the south of France, flowering from June to October.

The sixth species has a round branched stem, from three to four feet in height: the leaves are alternate, petioled, shorter than the petioles, roundish, but with the border so rolled back as to appear triangular: the stipules cordate, broad, acuminate, serrate: the flowers axillary: three peduncles, mostly one-flowered, in each axil, upright, shorter than the petiole: the segments of the outer calyx broad-cordate, acuminate: the inner calyx twice as large, five-cornered, acuminate, with the corners prominent: corolla large, spreading, pale purple, with the claws white, hairy: the capsules about fifteen, in a ring about a column ending in a point. According to Linnæus, the whole plant is tomentose, being covered with very small glutinous hairs, with other larger ones stellate at top mixed among them. It is a native of France and Spain, flowering from June to September.

The seventh is a native of Portugal, flowering in August and September.

Culture.—The first two, or annual sorts, are readily increased, by sowing the seeds in a light soil in the places where the plants are to remain, or in pots, in the spring season, as about the latter end of March, in patches of four or five in each, giving them water occasionally when the weather is dry. When the plants have attained a little growth, they should be thinned out to one or two of the strongest plants. When any are to be removed to other places, it should be done at this period, and with a little earth about the roots, due water and shade being given; but they seldom succeed well by transplanting.

All the other shrubby perennial sorts may likewise be increased by sowing the seeds, and managing the plants in the same manner.

Most of these sorts will not last more than two years in this climate, unless the soil be dry, when they continue three or four.

They in general require a warm dry situation, or to have their roots covered by old tan, or the protection of the green-house during the severity of the winter season.

They are all highly ornamental in different parts of pleasure-grounds. The annual sorts have great beauty, in their flowers being large, numerous, and conspicuous, and are proper where large showy-flowering plants are required. The perennial kinds are also suitable for large borders and shrubbery compartments, having large, straight, upright, durable stems, terminated by branchy bushy heads, and very large soft foliage, that form a fine variety in assemblage with other plants, though their flowers are often hidden by their large leaves.

2. LATHYRUS SATIVUS.

BLUE-FLOWERED LATHYRUS.

THIS genus contains plants of the herbaceous climbing flowery kinds.

It belongs to the class and order *Diadelphia Decandria*, and ranks in the natural order of *Papilionaceæ* or *Leguminosæ*.

The characters are: that the calyx is a one-leafed perianthium, half five-cleft, bell-shaped: divisions lanceolate, sharp: the two upper ones shorter; the lowest longer: the corolla papilionaceous: standard obcordate, very large, reflex on the sides and tip: wings oblong, lunulate, short, obtuse: keel half-orbiculate, size of the wings, and wider than the wings, gaping inwards in the middle: the stamina have diadelphous filaments, (single and nine-cleft) rising upwards: anthers, roundish: the pistillum is a compressed germ, oblong, linear: style erected upwards, flat, wider above, with sharp tip: stigma, from the middle of the style to the tip villose in front: the pericarpium is a legume, very long, cylindric or compressed, acuminate, one-celled, bivalve: the seeds several, cylindric, globose, or but little cornered.

The species cultivated are: 1. *L. odoratus*, Sweet Lathyrus, or Pea; 2. *L. Tingitanus*, Tangier Lathyrus, or Pea; 3. *L. latifolius*, Broad-leaved Lathyrus, or Everlasting Pea.

Several other species may be cultivated where variety is wanted.

The first is an annual plant, which rises from three to four feet high by means of its long claspers or tendrils: the flower-stalks come out at the joints, are about six inches long, and sustain two large flowers, which have a strong odour, and are succeeded by oblong hairy pods, having four five or roundish seeds in each. It is a native of Sicily.

There are several varieties; as the purple-flowered, the white-flowered, the variegated or painted lady, sweet-scented, and the scarlet.

The second species has the stem four or five feet high: the leaflets veined: the peduncles short, sustaining two large flowers with purple standards, the wings and keel bright red: the legumes long, jointed, containing several seeds.

Martyn observes, that the whole plant is very smooth: the stem branched, running out on each side into a slender sharp wing: the petioles angular, ending in bifid, trifid, or simple tendrils: the stipules lanceolate, acuminate, produced downwards into an earlet, similar but much smaller: the peduncles sometimes one-flowered. It is a native of Barbary, flowering in June and July; and although it has not the agreeable scent, or variety of colours, or continuance in blow of the Sweet Pea, it is usually sown in gardens with other annual seeds.

The third has a perennial root: the stalks several, thick, climbing by means of tendrils to the height of six or eight feet, or even higher in woods: these die to the ground in autumn, and new ones rise in the spring from the same root: the leaves stiff, marked with three or five strong ribs, rolled in at the edge, blunt at the end, but terminating in a little point or bristle; they are always in pairs, and on a winged petiole; at the base of this are large stipules, shaped somewhat like the head of a halbert: the tendrils multifid or branched: the peduncles eight or nine inches long. Each flower has an awl-shaped bracte at the base of the pedicel: the corolla pale purplish rose-colour: the legumes an inch and half long, and half an inch in breadth. It is a native of many parts of Europe, flowering at the end of June and beginning of July.

It is a showy plant for shrubberies, wilderness quarters, arbours, and trellis-work; but too large and rampant for borders of the common flower-garden.

There are many varieties; as the red-flowered, the purple-flowered, the scarlet-flowered, and the large-flowered.

Culture.—These plants may be readily raised, by sowing the seeds

of the different sorts in the autumn or spring seasons at different times, in patches of six or eight together, in the places where they are to grow. Where the soil is light and dry, the autumn is the best season, as the plants appear more early, but in other cases the spring should be preferred. The plants afterwards only require to be kept clean from weeds, and be properly supported by branchy sticks.

The last sort may likewise be increased by transplanting the roots in the autumn; but the plants in this way are seldom so good as by seeds.

The two first sorts must be sown annually, but the last will remain many years.

It is the practice with the gardeners who raise the first sorts for the London markets, to sow them in the autumn, in pots, and secure them from severe weather, by placing them in hot-bed frames; by which means they can bring them much more early to market. They may be continued in flower the whole summer by repeated sowings in the spring. When sown in pots they should be watered frequently.

They are all highly ornamental in the borders, clumps, and other parts of pleasure-grounds, when properly intermixed in their species and different varieties.

PLATE XXXIV.

LYCHNIS CHALCEDONICA.

SCARLET LYCHNIS.

THIS genus contains plants of the hardy, herbaceous, flowery, perennial kind.

It belongs to the class and order *Decandria.Pentagynia*, and ranks in the natural order of *Caryophyllei*.

The characters are: that the calyx is a one-leaved perianthium, oblong, membranaceous, five-toothed, permanent: the corolla has five petals: claws the length of the calyx, flat, margined: border often cloven, flat: the stamina have ten filaments, longer than the calyx, alternately shorter, each of these fixed to a claw of each petal: anthers incumbent: the pistillum is a subovate germ: styles five, awl-shaped, longer than the stamens: stigmas reflex against the sun, pubescent: the pericarpium is a capsule approaching to an ovate form, covered, one, three, or five celled, five-valved: the seeds very many, and roundish.

The species cultivated are: 1. *L. chalcedonica*, Scarlet Lychnis; 2. *L. Flos cuculi*, Red-flowered Lychnis, Meadow Pink, or Ragged Robin; 3. *L. coronata*, Chinese Lychnis; 4. *L. viscaria*, Viscous Lychnis, or Catchfly; 5. *L. diurna*, Rose-flowered Lychnis, Wild Red Champion, or Red Bachelor's Buttons; 6. *L. vespertina*, White-flowered Lychnis, Wild White Champion, or White Bachelor's Buttons.

The first has a perennial root: the stems three feet high, upright, stiff, round, jointed, hairy: at every joint are two large leaves of a brownish green colour: the flowers terminating in a large flat-topped tuft, consisting of several bundles: the corolla is of a scarlet or bright



Drawn by Syd Edwards

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Engraved by F. Sanghvi

Lychnis chalcedonica
1 *Scarlet Lychnis*

Leucojum vernum
2 *Spring snowflake*

Lyximachia Nummularia
3 *Creeping Moneywort*

red orange colour, varying to white, blush, and variable, that is, pale red, growing paler till it becomes almost white. It is a native of Russia, &c.

Besides its varying as above, there is a variety with very double flowers of a beautiful scarlet colour: it has a perennial root, from which arise two, three, or four stalks, according to the strength of the roots, which in rich moist land grow upwards of four feet high; the stalks are strong, erect, and hairy, being garnished the whole length with spear-shaped leaves sitting close to the stalks, placed opposite; and just above each pair of leaves there are four smaller leaves standing round the stalk: the flowers are produced in close clusters sitting upon the top of the stalk: when the roots are strong, the clusters of flowers are very large, and make a fine appearance, coming out the latter end of June, and in moderate seasons continue near a month in beauty. The stalks decay in autumn, and new ones arise in the following spring.

The second has also a perennial root, bronwish white, subacrid: the stems from one to three feet high, upright, somewhat angular and grooved, swelled at the joints, purplish: they are procumbent, and become upright at the time of flowering: the stem-leaves opposite, connate, lanceolate, keeled, upright, smooth: the peduncles opposite, with one generally between them: the calyx ten-angled, of a deep purple colour: the corolla pink or purplish red, varying sometimes to white: the border of the petals dividing into four segments, of which the two outer are shorter and narrower: the claws have two small spear-shaped teeth at the top: the capsule one-celled, the mouth having five teeth which turn back: the seeds flattish, rugged, of a brown ash-colour. It is a native of most parts of Europe, flowering in May and June.

In the third the whole plant is smooth: the stem simple, round, upright, a foot high: the leaves opposite, embracing, oblong-ovate, acute, entire, an inch or a little more in length: the flowers aggregate, about three, sessile: the calyx is ten-angled: the petals are gashed, crenate multifid: the filaments the length of the tube of the corolla, filiform: the germ superior: styles five, much shorter than the

tube of the corolla. It is a native of China and Japan, flowering in June and July.

The fourth species has long, narrow, grass-like leaves, which come out from the root without order, sitting close to the ground; between these come up straight single stalks, which in good ground rise a foot and half high; at each joint of the stalk come out two leaves opposite, of the same form as the lower, but decreasing in their size upwards; under each pair of leaves, for an inch in length, there sweats out of the stalk a glutinous liquor, which is almost as clammy as birdlime, so that ants and other insects which happen to light upon these places, or attempt to creep up to the flowers, are fastened to the stalk; whence the title of Catchfly: the root is perennial, yellowish on the outside, white within: the stem round, not grooved, smooth, being terminated by a cluster of purple flowers, and from the two upper joints come out on each side of the stalk a cluster of the same flowers, so that the whole forms a sort of loose spike: these appear in the beginning of May, and the single flowers are succeeded by roundish seed-vessels, which are full of small angular seeds, ripening in July. It is a native of most parts of Europe.

The fifth has likewise a perennial root, the thickness of the little finger, white, of a slightly acrid and bitter taste, furnished with numerous fibres: the stalks are several, upright, from one to three feet high, round, hirsute, jointed, purple, the joints swelled: the uppermost branches forked: the leaves opposite, connate, ovate-acuminate, hirsute, slightly nerved: the calyx is hairy, striated, purple, five-toothed; in the female more turgid: the petals purple, obcordate: at the bottom of the lamina or broad spreading part are two or four small upright white blunt appendices: the germ is ovate, surrounded by a nectary at the base: the capsule one-celled, with ten teeth at the mouth: seeds gray, somewhat rugged. It is a native of many parts of Europe.

There is a variety with double flowers, cultivated in gardens by the name of Red Bachelor's Buttons, which is an ornamental plant, and continues long in flower.

The sixth species has the stalks branched out much more than in the fifth sort, being weaker and more flaccid: the leaves are longer and more veined: the flowers stand singly upon pretty long peduncles, and are not produced in clusters as in that; it is very hairy, the calyx is more swollen, and it flowers a month after it. And Dr. Withering remarks, that the petals on the male plant have the laminæ divided down to the claws, but in the female they are only cloven half way down. Dr. John Sibthorp also states, that the capsules in the fifth are roundish, and that its scentless flowers stand open through the day; while this has conical capsules, and its odoriferous flowers open only towards evening. This also prefers a dry soil, while that spreads in a moist one. It is common in Siberia.

There are varieties with purple or blush-coloured flowers; with quadrifid petals; with hermaphrodite flowers; with double flowers, cultivated in gardens by the name of Double White Bachelor's Buttons.

Culture.—They may be increased with facility in the single sorts by seed, and parting the roots; and in the doubles by dividing or slipping the roots, and sometimes by cuttings of their stalks.

The seed should be sown in the early spring, as in March, in a bed or border of light earth, in an eastern aspect, each sort separate, raking them in lightly, or they may be sown in small drills. The plants come up in two or three weeks, when they should have occasional waterings and hand weedings: and when the plants are two or three inches high, be planted out in beds or borders, in rows six inches asunder, watering them till fresh rooted, letting them remain till the autumn or following spring, when they should be transplanted where they are to remain.

Both the single and double may be increased by slipping the roots; but it is more particularly applicable to the double sort, as they cannot with certainty be obtained from seed: the season for performing this work is the autumn, after the stalks decay, when the whole root may either be taken up, and divided into as many slips as are furnished with proper root-fibres, or the main root stand, and as many of the outer offsets as seem convenient be slipped off: these slips,

when strong, should be planted at once where they are to remain; but when rather small and weak, it is better to plant them in nursery-rows, half a foot asunder, to remain a year, and then transplant them for good where they are to stand.

The planting of cuttings of the stalks is mostly practised for the double scarlet sort, when it increases but sparingly by offsets of the root. It is performed in summer, when the stalks are well advanced in growth, but before they flower, or have become hard and woody. Some of them should be cut off close to the bottom, and divided into lengths of from three to five joints, planting them in an easterly border of rich moist loamy earth, two-thirds of their length into the ground, leaving only one joint or eye out, watering them directly, and repeating it occasionally with necessary shade in hot weather. They will be well rooted, and form proper plants for transplanting in the autumn. If the cuttings, as soon as planted, are covered down close with hand-glasses, it will greatly promote their rooting, so as to form stronger plants before the winter season comes on.

The only culture they require afterwards is clearing them from weeds in summer, and supporting with stakes them which need it, cutting down and clearing away the decayed stalks in the autumn.

Of the third sort, as being rather more tender, some plants should be planted in pots, for moving under the protection of a frame or green-house in the winter season.

They are all very ornamental for the pleasure-grounds, particularly the doubles, and prosper in any common soil, remaining in all weathers unhurt, being of many years duration in root; and, when of some standing, send up many stalks every spring, terminated by numerous flowers, making a fine appearance in summer. The Scarlet Double *Lychnis* claims the preference, though the single scarlet sort is also very showy. And all the other species in their respective double-flowered states are ornamental. They are all kept in the nurseries for sale. In planting out, the tallest growers should be placed the most backward, and the others more towards the front.

2. LEUCOJUM VERNUM.

SPRING SNOW-FLAKE.

THIS genus contains plants of the bulbous-rooted flowery perennial kind.

It belongs to the class and order *Hexandria Monogynia*, and ranks in the natural order of *Spathaceæ*

The characters are: that the calyx is an oblong, obtuse, compressed spathe, gaping on the flat side, withering: the corolla is bell-shaped expanded: petals six, ovate, flat, conjoined at the base, with the tips thickish and stiffish: the stamina have six setaceous filaments, very short: anthers oblong, obtuse, quadrangular, upright, distant: the pistillum is a roundish inferior germ: style clavate, obtuse: stigma setaceous, upright, sharp, longer than the stamens: the pericarpium is a top-shaped capsule, three-celled, three-valved: the seeds several, roundish.

The species cultivated are: 1. *L. vernal*, Great Spring Snow-drop; 2. *L. æstivum*, Summer Snow-drop; 3. *L. autumnale*, Autumnal Snow-drop; 4. *L. strumosum*, Many-flowered Cape Leucojum.

The first has an oblong bulb, shaped like that of the Daffodil, but smaller: the leaves are flat, deep green, four or five in number, broader and longer than those of the Common Snow-drop: the scape angular, near a foot high, hollow and channelled: towards the top comes out a whitish sheath, opening on the side, out of which come out two or three flowers, hanging on slender peduncles: the corolla is much larger than that of the Common Snow-drop; and the ends of the petals are green. They appear in March, and have an agreeable scent, not much unlike those of the Hawthorn.

The flowers, which at first sight resemble those of the Common Snow-drop, are easily distinguished by the absence of the Three-

leaved Nectary: they do not come out so soon by a month. It is called by Mr. Curtis, *Spring Snow-flake*. It is a native of Italy, &c.

The second species has a bulb the size of a Chesnut, somewhat ovate, outwardly pale-brown, inwardly white; coats numerous, thin, and closely compacted. But Miller asserts, that it is nearly as large as that of the Common Daffodil, and very like it in shape: that the leaves also are not unlike those of the Daffodil, more in number than in the first, and keeled at the bottom, where they fold over each other, and embrace the stalk: the leaves are about a foot and half in length, upright, nearly linear, almost an inch in breadth, obtuse; the lower ones shortest: the scape a little higher than the leaves, hollow, slightly flatted, two-edged, a little twisted, one side sometimes obtuse, the other acute: the peduncles for the most part five from the same sheath, each supporting a single flower, angular, and of unequal lengths: the flowers are pendulous, growing all one way, having little scent: the petals are white, finely grooved within, not at all uniting at bottom; the tips thickish, a little puckered, and marked with a green spot. The flowers appear at the end of April or the beginning of May, and there is a succession of them during three weeks, or longer in cool weather. It is a native of Hungary, &c.

To distinguish it from *Galanthus*, Mr. Curtis names it *Summer Snow-flake*; and in gardens it is known by the name of *Great Summer Snow-drop*; *Late* or *Tall Snow-drop*.

The third has a thick bulb for the size of the plant, composed of many glutinous coats, bitter, covered with a whitish membrane: the scape slender, brownish, a hand in height, supporting two or three small white flowers (sometimes only one), hanging down, having no smell. It is distinguished by its four or five capillary leaves, which begin to spring up after the flower is past, when the seeds are ripening, and sometimes after the heads are ripe. They abide all the winter and spring following, and wither away in the beginning of summer; leaving the scape to appear naked: the flowers are a little reddish at the bottom next the stalk. It is a native of Portugal, flowering in September.

The fourth has a roundish white bulb, less than a hazel nut: the

leaves two or three, inclosed at the base in a white sheath, filiform, dotted with white, keeled at bottom, flat, or a little convex on the back, weak, and more or less lying on the ground: scape flexuose-erect, slender, about half a foot high, roundish, terminated by a spreading umbel of from three to seven flowers: the valves of the spathe lanceolate, acute, membranaceous, opposite, sometimes equal, sometimes not, pale: the peduncles filiform, one-flowered, unequal, from one to two inches in length: flowers without scent, coming out successively: petals white within, purplish without, oblong, lanceolate, three lines in length; the three inner bluntish; the three outer acute, with a blunt greenish keel: anthers purple: germ three-cornered, green: style white, swelled out at bottom into a body larger than the germ, plaited at bottom; thence awl-shaped, bluntly three-cornered, the length of the stamens: stigma obscurely trifid: capsule subglobular, three-cornered: the whole plant is smooth. It is a native of the Cape, flowering in November.

Culture.—These plants are readily increased by off-sets from the roots, which should be separated from the old roots about every third year, in the summer season, as soon as their leaves begin to decay, in the same manner as other bulbous roots.

They may also be increased by seeds, which should be sown in the latter end of August, in a border of light bog earth. The plants should remain in this situation till the second summer, and be then taken up at the proper period and planted in beds, till they begin to flower, when they should be removed into the borders. In this way they are three or four years before they flower,

The best method is, to procure the roots from the nurserymen, and plant them in the beginning of the autumn, in an eastern or northern border, where the soil is of a boggy quality, in patches of three or four together, in the fronts, putting them in to the depth of about three or four inches.

The off-sets should be planted out in beds a year or two after being taken off, till fit to be set out for flowering.

A soft loamy soil, or a mixture of loam and bog earth, are the

most suited to their healthy growth. The last sort requires protection in the house with other Cape bulbs.

By planting them in the different aspects mentioned, a longer succession of flowers may be produced.

They are very ornamental in the fronts of the borders, or the sides of the lawns, and other parts near the house.

3. LYSIMACHIA NUMMULARIA.

CREEPING MONEYWORT.

THIS genus contains plants of the hardy herbaceous biennial and perennial kinds.

It belongs to the class and order *Pentandria Monogynia*, and ranks in the natural order of *Rotaceæ*.

The characters are: that the calyx is a five-parted perianthium, acute, erect, permanent: the corolla one-petalled, wheel-shaped: tube none: border five-parted, flat: divisions ovate-oblong: the stamina have five awl-shaped filaments, opposite to the divisions of the corolla: anthers acuminate: the pistillum is a roundish germ: style filiform, the length of the stamens: stigma obtuse: the pericarpium is a globular capsule, mucronate, one-celled, ten-valved (five-valved): the seeds very many, and angular: the receptacle globular, very large, dotted, (free.)

The species cultivated are: 1. *L. Ephemerum*, Willow-leaved Loose-strife; 2. *L. dubia*, Purple-flowered Loose-strife; 3. *L. stricta*, Upright Loose-strife.

The first has a perennial root: the stems several, upright, more than three feet high: the leaves narrow, smooth, and at the base of these come out short side branches, with smaller leaves of the same shape: the flowers are produced in a long close upright spike, at the

top of the stalk: the corolla is white: the stamens longer than the corolla. It is very distinct from the second sort by its size, five-valved capsules, white flowers, and leaves without dots. It is a native of Spain, flowering from July to September.

The second species is an annual (biennial) plant, too tender for the open air of this climate: it agrees with the first sort in habit, structure, and glaucous colour: it has no dots under the leaves: the petals are acuminate, a little longer than the calyx, converging, and deep red: the stamens are longer than the corolla, with brown anthers: and the flowers sessile in a spike. It is nearly allied to the first sort, and is a native of the Levant, flowering in July and August.

The third has the stem erect, four-cornered, smooth: the leaves quite entire, acute, smooth, dotted: the racemes simple: the pedicels in a sort of whorl, filiform, an inch long: the bractes lanceolate, very short: the divisions of the calyx lanceolate, smooth, dotted with red: the petals three times as long as the calyx, yellow, with red stripes and dots, and two dark-red spots: the stamens shorter than the corolla. It is a native of North America, flowering in July and August.

Culture.—These may all be easily increased either by sowing the seeds in the autumn, as soon as they are fully ripened, on a moist border, with an eastern aspect; or by parting the roots, and planting them out at the same season, in the same situations.

The plants should afterwards be kept clean, and in the first method removed into the situations where they are to remain in the autumn.

In the second sort the seeds should be sown on a hot-bed.

The third sort is increased by planting the bulbs thrown out from the axils of the leaves.

They all afford ornament and variety in the borders and other parts of pleasure-grounds.

PLATE XXXV.

1. LOBELIA CARDINALIS.

SCARLET LOBELIA, OR CARDINAL'S FLOWER.

THIS genus contains plants of the herbaceous and under shrubby perennial kind.

It belongs to the class and order *Syngenesia Monogamia*, and ranks in the natural order of *Campanaceæ*.

The characters are: that the calyx is a one-leafed perianthium, five-cleft, very small: growing round the germ, withering: toothlets nearly equal: the two superior ones looking more upward: the corolla one-petalled, irregular: tube cylindric, longer than the calyx, divided longitudinally above: border five-parted, divisions lanceolate; of which the two superior ones are smaller, less reflex, more deeply divided, constituting an upper lip: the three inferior ones more spreading, frequently larger: the stamina have five awl-shaped filaments, the length of the tube of the petal, connate above: anthers connate into an oblong cylinder, gaping five ways at the base: the pistillum is a sharp-pointed, inferior germ: style cylindric, length of the stamens: stigma obtuse, hispid: the pericarpium an ovate capsule, two or three-celled, two or three-valved, gaping at the top, girt by the calyx: dissepiments contrary to the valves: the seeds a great many, very small: receptacle conic.

The species cultivated are: 1. *L. cardinalis*, Scarlet Lobelia, or Cardinal's Flower; 2. *L. siphilitica*, Blue Lobelia, or Cardinal Flower; 3. *L. longiflora*, Long-flowered Lobelia; 4. *L. pinifolia*, Pine-leaved Lobelia; 5. *L. inflata*, Bladder-podded Lobelia.

In the first, the root is composed of many white fleshy fibres: the lower leaves are oblong, and of a dark purplish colour on their upper



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Engraved by F. Sanfey.

Lobelia Cardinalis

Lilium

Candidum

1 Scarlet Lobelia or Cardinals flower.

2 White Lily.

side: the stalks are erect, about a foot and a half high, with leaves about three inches long, and an inch and half broad in the middle, on very short petioles and placed alternately: the stalk is terminated by a spike (raceme) of flowers, of an exceeding beautiful scarlet colour; they have a pretty long tube, which is a little incurved, and at the top they are cut longitudinally into five segments; the two upper, which are the smallest, are greatly reflexed; the three under, which form the lower lip, are longer, and spread open. They appear at the end of July and in August, when they make a fine appearance for a month or more, and when the autumn proves favourable produce good seeds. It grows naturally in North America.

The second species has a perennial root: the stem simple, from a foot to two feet in height, and upwards, strong, simple, smooth, with angles formed by the decurrent edges of the leaves having stiffish hairs on them: the leaves are alternate, sessile, somewhat rugged: the flowers axillary, solitary, numerous, large, on short peduncles, forming altogether a long spike of a pale blue colour. It is a native of Virginia, flowering from August to October.

The third is an annual herbaceous elegant plant, seldom above fourteen or sixteen inches in height; the whole of it rough-haired: the stem almost upright, very much branched from all the axils: the leaves are alternate, sessile, subpinnatifid-toothed, sharpish, smooth, half a foot long: the peduncles one-flowered, axillary, solitary, villose. The whole plant is poisonous. It is a native of Jamaica, flowering from June to August.

The fourth species is a shrubby, upright, branched plant, the branches surrounded with abundance of narrow sharp leaves an inch in length: the flowers many, small, blue, at the tops of the twigs, among the leaves. It is a native of the Cape of Good Hope.

The fifth is a biennial plant in this climate: the stems channelled, hairy, two feet high: the leaves about two inches long, and one broad in the middle, sessile, light green: flowers small, on long, slender, axillary peduncles, forming a loose spike: the corolla light blue. It flowers in July, and is a native of Virginia, &c.

Culture.—The two first kinds may be increased by seed, cuttings of their stalks, and parting the roots.

The seeds should be sown in autumn, or early in spring, in a warm border, or in pots or boxes, so as to be moved to different situations in different seasons, to have shelter from frost, and shade from the mid-day sun in summer. Those sown in autumn generally come up more freely the following spring than those which are sown in that season. They should have shelter in hard frosts, either under a frame, or awning of mats, but be fully exposed in mild weather, giving occasional waterings in the spring and summer. When the plants have attained two or three inches growth, they should be pricked out in separate small pots of rich earth, giving water, and placing them in the shade till fresh rooted, repeating the waterings occasionally in hot dry weather, and shifting them into larger pots as they may require; in winter moving them into a frame to have occasional shelter from inclement weather; and in the spring following some of them may be turned out into the full ground about March, when they will flower the ensuing summer. Some should also be retained in pots to be moved under shelter in winter, as a reserve in case those in the open air should be killed by frost.

As these plants generally flower in the greatest perfection the first and second year of their blowing, it is proper to raise a supply of new plants every year or two, in order to have them flower in the utmost perfection every year.

The cuttings of the young stalks should be divided into lengths of five or six inches, and be planted in an easterly border, two parts deep, being covered down with hand-glasses, and watered occasionally. They mostly emit roots, and form young plants in a month or six weeks; when the glasses should be taken away, and the plants managed as the others.

These hardy sorts sometimes afford off-sets from their sides at bottom, which may be separated in autumn, and potted for young plants, being managed as the seedlings.

The last three sorts may also be raised by seeds procured from abroad, which should be sown in pots of light sandy earth in the

autumn, and plunged in the bark-bed; and when the plants are three inches high, planted in separate pots, being re-plunged in the bark-bed, giving water and occasional shade till they are fresh rooted. They must remain constantly in the hot-house, and have frequent moderate waterings given them.

The first two sorts have a fine appearance in the borders and clumps of pleasure-grounds, where they will succeed when protected in winter from frosts.

And the tender sorts afford a fine variety in hot-house collections.

2. LILIUM CANDIDUM.

WHITE LILY.

THIS genus contains plants of the bulbous-rooted flowery perennial kind.

It belongs to the class and order *Hexandria Monogynia*, and ranks in the natural order of *Coronariæ*.

The characters are: that there is no calyx: the corolla is six-petalled, bell-shaped, narrowed beneath: petals upright, incumbent, obtusely carinated on the back, gradually more expanding, wider; with thick, reflex, obtuse tips: nectary, a longitudinal, tubular line, engraven on each petal from the base to the middle: the stamina have six awl-shaped filaments, upright, shorter than the corolla: anthers oblong, incumbent: the pistillum is an oblong germ, cylindric, striated with six furrows: style cylindric, length of the corolla: stigma thickish, triangular: the pericarpium is an oblong six-furrowed capsule, with a three-cornered, hollow, obtuse tip, three-celled, three-valved; the valves connected by hairs disposed in a cancellated manner; the seeds are numerous, incumbent in a twin order; flat, outwardly semi-orbicular.

The species cultivated are: 1. *L. candidum*, Common White

Lily; 2. *L. Catesbæi*, Catesby's Lily; 3. *L. bulbiferum*, Bulb-bearing or Orange Lily; 4. *L. Martagon*, Purple Martagon Lily, or Turk's Cap; 5. *L. Pomponium*, Pomponian Lily; 6. *L. chalcedonicum*, Scarlet Martagon Lily; 7. *L. superbum*, Great Yellow Martagon Lily; 8. *L. Canadense*, Canada Martagon Lily; 9. *L. Camschatcense*, Kamtschatka Lily; 10. *L. Philadelphicum*, Philadelphian Martagon Lily.

The first has a large bulb, from which proceed several succulent fibres: the stem stout, round, upright, usually about three feet in height: the leaves numerous, long, narrow-pointed, smooth, sessile: the flowers large and white, terminating the stem in a cluster on short peduncles: the petals within of a beautiful shining white; on the outside ridged and less luminous. It is a native of the Levant, flowering in June and July.

The principal varieties are; with striped flowers, or with blotched purple flowers, or with variegated striped leaves, or with yellow-edged leaves, with double flowers, and with pendulous flowers.

The first of these varieties is now become common; but the purple stain giving the flower a dull colour, the common white is generally preferred: the second is chiefly valued for its appearance in winter and spring; for the leaves coming out early in the autumn, spreading themselves flat on the ground, and being finely edged with a broad yellow band, make a pretty appearance during the winter and spring months, as it flowers earlier than the plain sort: the third is of little value, as the flowers never open well unless they are covered with glasses, nor have they any of the rich odour of the common sort: the fourth came originally from Constantinople; the stalk is much more slender; the leaves narrower and fewer in number; the flowers not quite so large, and the petals more contracted at the base; they always hang downwards; the stalks are sometimes very broad and flat, appearing as if two or three were joined together: when this happens, they sustain from sixty to one hundred flowers, and sometimes more; this however is merely accidental, as the same root scarcely ever produces the same two years together.

The second species is one of the least of the cultivated sorts, the whole plant when in bloom being frequently little more than a foot

high; in its native soil it is described as growing to the height of two feet: the stalk is terminated by one upright flower: it is purple, slender, upright, round, smooth with a slight glaucous bloom on it, solid, stiffish: the root-leaves few, often only on the barren plant, on long petioles: the stem-leaves are numerous, alternately scattered, sessile, curved back, narrow-lanceolate, the upper ones gradually more ovate-lanceolate, quite entire, blunt with a purple tip, even on both sides, slenderly nerved, flat, a little fleshy, shrivelling: the flower has no scent, but is said by Catesby, to be variously shaded with red, orange, and lemon colours: it is remarked by Mr. Curtis, that it varies considerably in the breadth of its petals, in their colour and spots; and that it flowers usually in July or August.

The third has a subovate bulb in its native state, consisting of thick white loosely imbricate scales, putting out a few thick fibres from the bottom: the stem upright, a foot and half high, striated-angular, smooth or slightly hairy, with numerous scattered leaves, the upper ones spreading out horizontally, acute, quite entire, obsoletely hirsute, a little rough to the touch, dark green, slightly nerved, sessile, lanceolate-linear, three or four inches long; each, excepting the lower, frequently producing a roundish and shining pale-green bulb or two in the axil: the peduncle terminating, round, thick, somewhat villose; either solitary, or two, three or four together, forming a sort of umbel; some naked, others having a bracte or two: the flower without scent, red-orange within, pale-orange on the outside. It is a native of Austria, &c.

There are varieties with double flowers, with variegated leaves, with smaller stems, and the bulb-bearing fiery Lily, which seldom rises more than half the height of the others: the leaves are narrower: the flowers smaller, and of a brighter flame-colour, few in number, and more erect; they come out a month before those of the common sort, and the stalks put out bulbs at most of the axils, which, if taken off when the stalks decay, and planted, produce plants.

The sub-varieties are: the great broad leaved, the many-flowered, the small, and the hoary bulb-bearing Lily.

The fourth species rises with a strong stalk from three to four feet high: the leaves are broad; the flowers dark purple, with some spots of black; they are produced in loose spikes, appear in June, and have a disagreeable odour when near, but not so offensive as the seventh sort: the bulb is, according to Martyn, composed of lanceolate, yellow, loose scales, with thick, long, whitish fibres at bottom: the stem straight, round, shining, from a foot and a half to four feet in height, at the top of the bulb furnished with rooting fibres in whorls, pale green at bottom, the rest having black spots scattered over it; above and below the leaves are scattered, but in the middle they are in whorls; lanceolate, acute, somewhat nerved, quite entire, subpetioled; the stem terminates in a loose raceme, many-flowered, few-flowered, or sometimes one-flowered only: the peduncles purple, dotted with black, with lanceolate sharp bractes, two to the lower, and one to the upper flowers: the petals purple or pale, more or less spotted with black on both sides, the three outer hirsute, with a raised line along the middle. It is a native of the south of Europe, &c.

It varies with white flowers, with double flowers, with red flowers and hairy stalks, and with imperial divided stalks.

The fifth species has a pretty large yellow scaly root, from which arises an upright stalk nearly three feet high, with long narrow leaves, almost triangular, having a longitudinal ridge on their under side; they are deep green, and terminate in acute points; the upper part of the stalk divides into four or five peduncles, each sustaining a single flower of a fine carmine colour, with a few dark spots scattered over it; they appear in July, and, when the season is not hot, continue a considerable time in beauty. It is a native of the Pyrenees, &c.

It varies with double red flowers, with white flowers, with double white flowers, with red spotted flowers, with white spotted flowers, with yellow flowers, with yellow spotted flowers, with early scarlet flowers, and the Major Scarlet Pompony.

The sixth species is from three to four feet in height; the leaves are much broader than those of the fifth sort, and appear as if they

were edged with white; they are placed very closely upon the stalks: the flowers are of a bright scarlet, and seldom more than five or six in number: it flowers late in July, and in cool seasons continues in beauty great part of August. It is remarked by Linnæus, that the raceme, before the flowers open, is scarcely curved in, as in the fifth sort, and that the stem is clothed with clustered leaves to the very top. It is a native of the Levant.

According to Mr. Curtis, it varies in the number of flowers, from one to six, and the colour in some is of a blood red: also with deep scarlet flowers, with purple flowers, and with large bunches of flowers.

The seventh has a round stem, very smooth and even, panicked at top, two feet high and more; the branches alternate, divaricating, upright, like the stem, reflex at top, flower-bearing: the stem-leaves alternate, subpetioled, folded together at the base, ovate-oblong, acute, quite entire, smooth, five-nerved beneath, spreading; one flower at the end of each branch: the corollas are large and handsome: the petals oblong, acute, white with large purple spots and smaller black ones from the middle to the base: nectareous keel bearded: according to Catesby the flowers grow alternately on long footstalks, and are of an orange and lemon colour, thick spotted with dark brown; but Miller says they are produced in form of a pyramid, and when the roots are strong there are forty or fifty on a stalk, large, yellow with dark spots, and make a fine appearance, but smell so disagreeably, that few persons can endure to be near them: they appear at the end of June. It is a native of North America.

The eighth species has oblong and large bulbs: the stems from four to five feet high: the leaves oblong and pointed: the flowers large, yellow spotted with black, shaped like those of the orange lily, and the petals not turned back so much as in the other Martagons: they come out in the beginning of August, and, when the roots are large, in great numbers, making a fine appearance. According to Catesby, on the top of the stem are about twelve pendulous flowers on long arched peduncles, and the petals are reflected very

little. It flowers in July and August, and is found in North America.

There is a variety with larger deeper-coloured flowers.

The ninth has a roundish small bulb: the stem quite simple round, even, a foot high: the leaves lanceolate or lanceolate-linear, sessile, four or six, striated, rather blunt, even, upright; two or three of the upper ones usually alternate, narrower: the flowers terminating, few, an inch and a half in diameter, on very short, naked, almost upright peduncles: the petals ovate, blunt, even, striated, purple, not rolled back, attenuated at the base: the filaments shorter by half than the corolla: the anthers upright: the germ triangular and oblong: style none: stigmas three, oblong, curved back, almost the length of the germ. It is a native of Kamtschatka.

The tenth species has a smaller root than in the other sorts, scaly and white: the stem single, upright, near a foot and half high: the leaves in four or five whorls, short, pretty broad, obtuse: the stem terminated by two flowers which stand erect, upon short separate peduncles; they are shaped like those of the bulb-bearing fiery Lily, but the petals are narrower at their base, so that there is a considerable space between them, but upwards they enlarge and approximate, forming a sort of open bell-shaped corolla, but they terminate in acute points: are of a bright purple colour, marked with several dark purple spots towards the base. It flowers in July, and the seeds ripen at the end of September. It is a native of North America.

Culture.—All the sorts are capable of being increased by planting the off-sets of the root, and by sowing seeds to obtain new varieties.

All the sorts of these roots afford plenty of off-sets every year, which when greatly wanted may be taken off annually in autumn; but once in two or three years is better, according as they are wanted; the proper time for which is in summer and autumn, when the flower is past and the stalks decayed, either separating the off-sets from the mother bulbs in the ground, or taking the whole up, and separating all the off-sets, small and great, from the main bulbs; the small off-sets being then planted in beds a foot asunder and three inches deep,

to remain a year or two; and the large bulbs again in the borders, &c. singly. The off-sets in the nursery beds may also, after having obtained size and strength for flowering in perfection, be planted out where they are wanted.

The sowing of the seed is chiefly practised for the Martagons to obtain new varieties, which should be done in autumn, soon after the seed is ripe, in pots or boxes of rich light sandy earth, with holes in the bottoms half an inch deep; placing the pots in a sunny sheltered situation all winter, refreshing them at first often with water, and the plants will appear in the spring; when, about April, remove them to have only the morning sun all the summer, giving moderate waterings: in August the bulbs should be transplanted into nursery-beds in flat drills, an inch deep, and three or four asunder; when, as the bulbs will be very small, scatter the earth and bulbs together into the drills, covering them with earth to the above depth; and after having grown in this situation till the August or September following, they should be transplanted into another bed, placing them eight or nine inches each way asunder, to remain to show their first flowers; after which they may be finally planted out into the pleasure-ground.

New varieties of the other sorts may be raised in the same way.

The bulb-bearing varieties may also be increased by the little bulbs put forth from the axils of the leaves without taking up the old bulbs.

The same method of planting and general culture answers for all the different sorts.

The most proper time, as has been seen, for planting and transplanting them is in autumn, when their flowers and stalks decay, which is generally about September, the roots being then at rest for a short space of time, as well as for procuring roots to plant. The bulbs taken up at the above season may be kept out of ground, if necessary, till October or November: the White Lilies, however, do not succeed if kept long out of the earth, and all the others succeed best when planted again as soon as possible. The bulbs of all the sorts are sold at the nurseries.

They should be planted singly, as they soon increase by off-sets

into large bunches, disposing them in assemblage in different parts of the borders, and towards the fronts of the principal shrubbery clumps; placing them three or four inches deep, and at good distances from one another, intermixing the different sorts, placing some forward, and others more backward, to effect the greater show and variety.

Some may likewise be planted in separate beds by themselves, twelve or fifteen inches asunder; either of different sorts together, or each in distinct beds, or in separate rows, &c.

After being thus planted out, few of the sorts require any particular culture, as they are capable of enduring all weather at every season. It is however necessary to destroy all weeds; and, as some of them run up with pretty tall slender stalks, to support them with sticks to preserve effectually their upright position, by which their flowers will appear to the best advantage.

Some of the more tender sorts, as the second, fourth, eighth, and tenth species, should, however, be protected in severe winters, by applying tanner's bark or some other similar substance over their roots.

They should all, as has been said, remain undisturbed two or three years, or longer, as by remaining they flower stronger after the first year; and having increased by off-sets into large bunches, many stalks will rise from each bunch of roots, so as to exhibit a large cluster of flowers: it is, however, proper to take up the bulbs entirely every three or four years at least, at the decay of the stalk, to separate the increased off-sets, both for propagation and to disburthen the main roots, and give them room to take their proper growth in.

After being taken up in the autumn, all the sorts should, as just observed, be replanted as soon as possible, especially the White Lily sorts, as they soon begin to emit roots.

They are all valuable as plants of ornament for the beauty of their flowers, which have a noble appearance: they are of course proper ornaments for the pleasure-ground; and when the different sorts are properly intermixed, they effect a most elegant variety, succeeding

each other in blow upwards of three months. When wanted particularly for shady or close places the common White Lily, Orange Lily, and common Martagons, are the most proper, as they thrive under trees. The Orange Lily also answers well in small gardens, in the midst of buildings in towns and cities. Besides planting the different sorts for the beauty of their flowers, many of the striped-leaved White Lily sorts should be placed towards the fronts of the most conspicuous parts for the beauty of their leaves in autumn, winter, and spring, which, if disposed alternately with the Common White Lily, whose leaves are entirely green, a most striking variety will be produced.

The tall-growing sorts are only proper for large borders and clumps, in mixture with other large herbaceous plants.

PLATE XXXVI.

1. MIRABILIS JALAPA.

MARVEL OF PERU.

THIS genus furnishes plants of the flowery perennial kind.

It belongs to the class and order *Pentandria Monogynia*, and ranks in the natural order of *Nyctagines*.

The characters are: that the calyx has the outer perianthium one-leafed, erect-ventricose, inferior, five-parted: segments ovate-lanceolate, sharp, unequal, permanent: inner globular placed under the petal, with a contracted entire mouth, and permanent: the corolla is one-petalled, funnel-form: the tube slender, long, thicker at top, placed on the inner calyx: border from upright spreading, entire, bluntly five-cleft, plaited: nectary spherical, fleshy, surrounding the germ, with a five-toothed mouth: teeth very small, triangular, converging: the stamina have five filaments inserted into the orifice of the nectary, and alternate with its teeth, within the inner calyx free, more slender, fastened at bottom to the tube of the corolla, filiform, the length of the corolla, inclining, unequal: anthers twin, roundish, rising: the pistillum is a turbinate germ, within the nectary: style filiform, the length and situation of the stamens: stigma globular, dotted, rising: there is no pericarpium: the inner calyx incrusts the seed and falls with it: the seed single, ovate-five-cornered.

The species cultivated are: 1. *M. jalapa*, Common Marvel of Peru; 2. *M. dichotoma*, Forked Marvel of Peru; 3. *M. longiflora*, Sweet-scented Marvel of Peru.

The first has a thick fleshy root: the stem thick, upright, much branched, and divided three feet or more in height: the leaves are broad, oblong, and opposite: flowers terminating, about six, in clus-



Painted by Ed Edwards
1 *Mirabilis jalapa*
Marvel of Peru.

London Published Mar 11 1836 by G Kearsley Fleet Street
2 *Mimosa sensitiva*
Sensitive Plant.

Engraved by F Jantzen
3 *Monarda didyma*
Scarlet Monarda.

ters close together without any leaflets between them, and not longer than the leaf. It is perennial, and a native of both the Indies, flowering from July to October.

There are several varieties in the colour of the flowers, as purple or red, white, yellow, variegated purple and white, and variegated purple and yellow, but which resolve themselves into two principal varieties; as with purple and white flowers, which are variable; some being plain purple, others plain white, but most of them variegated with the two colours, and all found occasionally on the same plant; and with red and yellow flowers, generally mixed, but sometimes distinct on the same plant; some plants having only plain flowers, others only variegated, and others again both plain and variegated: but the plants which are raised from seeds of the purple and white never produce red and yellow flowers, or the contrary.

All these varieties are highly ornamental during the months of July, August, and September, and when the season continues mild, often last till near the end of October. The flowers opening only towards the evening, while the weather continues warm, but in moderate cool weather, when the sun is obscured, they continue open almost the whole day, and are produced so plentifully at the ends of the branches, that when expanded the plant seems entirely covered with them, and from some being plain, others variegated, on the same plant, have a fine appearance.

The second species resembles the first sort very much: the stalks have thick swollen joints: the leaves are smaller: the flowers not much more than half the size, and do not vary in their colour from their natural purplish-red: the fruit is very rough. It is a native of Mexico; and common in the West Indies, where it is termed the *Four o'Clock Flower*, from the circumstance of the flowers opening at that time of the day.

In the third, the stalks fall on the ground, if not supported; they grow about three feet in length, and divide into several branches; are hairy and clammy: the flowers come out at the ends of the branches, are white, have very long slender tubes, and a faint musky odour, as in the other sorts; are shut during the day, and expand as the sun

declines: the seeds are larger than those of the other species, and as rough as those of the second sort. It is a native of Mexico, flowering from June till September.

Culture.—In all the sorts the propagation is effected by sowing the seed in the spring season, either on a warm border or in a hot-bed; but the latter method produces the plants considerably more early, and in the greatest perfection.

When cultivated on warm south borders, in the places where the plants are to remain, the seed should be sown about the middle of April, either in patches or in shallow drills, half an inch deep, and six inches asunder: and when the places can be covered with hand-glasses, or a frame and lights, or the seed be sown in pots under those protections, or any other occasional shelter during the night-time and in cold weather, it will greatly forward the germination of the seed, as well as the growth of the young plants afterwards. In the latter method, about June, the plants will be fit to plant out into the borders or into pots. Moist weather should be chosen for this purpose, and water and occasional shade be given till well rooted: they then readily grow, and acquire a tolerable size; but they do not attain to a large size, or flower so early by a month or six weeks as those forwarded in the hot-bed.

In the latter method, a hot-bed should be prepared in March, or early in April, under frame and lights, and earthed over about six inches deep; then sowing the seed in the earth of the bed in shallow drills half an inch deep, as directed above, or in pots of rich earth the same depth, plunging them in the earth of the bed. The latter is the better method. The plants soon rise; when they should have fresh air daily, in common with the other plants of the bed, and frequent refreshings of water; and when nearly two inches high, be planted out into another fresh hot-bed to forward them, placing them either in the earth of the bed, four or five inches asunder, or singly in small pots (thirty-twos), plunging them in the bed; water and shade should be immediately given till fresh-rooted, continuing the care of admitting fresh air every mild day; and about the middle or latter end of May, when they have acquired a good size and strength,

they should be inured by degrees to the full air, so as that they may be removed into it fully about the beginning of June, choosing mild cloudy moist weather, if possible, for the business; taking up such as grow in the beds, with balls of earth about their roots, and planting them in the borders; but those in pots may be turned out with the whole ball entire, and planted in that way. Some should also be removed into large pots for moving into particular situations. Water should be directly given, and occasional shade to such as require it, repeating the waterings to the whole, till they have struck fresh root and begun to grow, when they will not require any further culture, except the occasional support of sticks, which is most necessary in the last sort.

As the seed ripens well, it will frequently prevent the trouble of preserving the roots.

But when these are taken out of the ground in autumn, and laid in dry sand during the winter, secure from frost, and planted again in the spring, they grow much larger and flower earlier than the seedling plants: or when the roots are covered in winter with tanner's bark to keep out the frost, they often remain secure in the borders, where the soil is dry. When the roots thus taken out of the ground are planted the following spring in large pots, and plunged into a hot-bed, under a deep frame, they may be brought forward, and raised to the height of four or five feet, and flower much earlier in the season.

In collecting the seeds, care should be taken not to save any from the plants which have plain flowers; and in order to have variegated flowers, the plain flowers should be pulled off from those plants which are intended to stand for seed.

As the second sort is less hardy than the first and third, unless the plants are brought forward in the spring they seldom flower till very late, and their seeds do not ripen perfectly.

All the sorts are proper for the principal borders of pleasure-grounds, being very ornamental in their large branchy growth, as well as in their extensive flowering.

The root of all the sorts is a strong purgative.

2. MIMOSA SENSITIVA.

SENSITIVE PLANT.

THIS genus contains plants of the shrubby and under shrubby kind.

It belongs to the class and order *Polygamia Monœcia*, and ranks in the natural order of *Lomentaceæ*.

The characters are: that the calyx is a one-leafed perianthium, five-toothed, very small: the corolla has one petal, funnel-form, half-five-cleft, small: the stamina have capillary, very long filaments: anthers incumbent: the pistillum is an oblong germ: style filiform, shorter than the stamens: stigma truncated: the pericarpium is a long legume, with several transverse partitions: the seeds many, roundish, of various forms.

The species cultivated are: 1. *M. plena*, Double-flowered Annual Sensitive Mimosa; 2. *M. viva*, Lively Mimosa; 3. *M. quadrivalvis*, Quadrivalve-podded Humble Mimosa; 4. *M. sensitiva*, Sensitive Plant; 5. *M. pudica*, Humble Plant; 6. *M. virgata*, Long-twigged Mimosa; 7. *M. punctata*, Spotted-stalked Mimosa; 8. *M. pernambucana*, Slothful Mimosa; 9. *M. asperata*, Hairy-podded Mimosa; 10. *M. pigra*, Slow American Sensitive Plant; 11. *M. glauca*, Glaucous Mimosa; 12. *M. cornigera*, Horned Mimosa, or Cuckold Tree; 13. *M. horrida*, Horrid Mimosa; 14. *M. Farnesiana*, Farnesian Mimosa, or Sponge Tree; 15. *M. Nilotica*, Egyptian Mimosa; 16. *M. verticillata*, Whorl-leaved Mimosa; 17. *M. arborea*, Rough Tree Mimosa; 18. *M. Lebbeck*, Lebbeck, or Egyptian Mimosa; 19. *M. latisiliqua*, Broad-podded Mimosa; 20. *M. tamarindifolia*, Tamarind-leaved American Mimosa; 21. *M. circinalis*, Spiral Mimosa; 22. *M. pennata*, Small-leaved Mimosa; 23. *M. latifolia*, Broad-leaved Mimosa; 24. *M. purpurea*, Purple Mimosa, or Soldier Wood; 25. *M. reticulata*,

Netted Mimosa; 26. *M. scandens*, Climbing Mimosa; 27. *M. myrtifolia*, Myrtle-leaved Mimosa; 28. *M. suaveolens*, Sweet-scented Mimosa.

The first, when cultivated in the garden, has great resemblance to the seventh sort; but the stalks never grow so erect, the wings of the leaves are longer, and stand more horizontal: the heads of flowers are much larger, the stamens are longer, and the flowers on the under side of the spike which have no stamens are double; the pods also are shorter, and much broader than those of that sort.

It is annual; the stems round, herbaceous, smooth, procumbent, rooting at all the joints: the leaves three-paired or four-paired, contracting with the least touch: from the axils of these spring erect peduncles, four or five inches high, with scales the whole length, sustaining handsome, yellow, almost globular heads, the same size with those of red clover: the flowers different in shape, nature and use; those in the middle truly five-petalled, in small five-cleft calyxes, with many long stamens; but those in the circuit, instead of stamens, have oblong, beautiful, golden leaflets, much wider and handsomer than the true petals, which are small and of a greenish colour. These double flowers are barren; but the single ones are succeeded by flat, smooth, two-valved legumes, containing several black, shining, compressed seeds. It is a native of La Vera Cruz.

The second species has trailing herbaceous stalks, putting out roots at every joint, and spreading to a considerable distance. A single plant, in the stove, in one summer, has spread near three feet square, and the branches so closely joined, as to cover the surface of the bed; but when permitted to grow thus, the plants seldom produce flowers: the leaflets are narrow, and the petioles are short and smooth: the flowers axillary, on naked peduncles about an inch in length; they are of a pale yellowish colour, and are collected into small globular heads: the legumes short, flat, jointed, containing three or four compressed, roundish seeds. It is a native of Jamaica.

The third has a creeping root: the stalks slender, having four acute angles, armed pretty closely with short recurved spines: the leaves on long prickly foot-stalks, and thinly placed on the branches:

the wings two pairs, about an inch asunder, short: the leaflets narrow, not very close: the peduncles axillary, sustaining a small globular head of purple flowers: the legumes four-cornered, two inches long, four-celled, four-valved; containing several angular seeds in each cell. It was found at La Vera Cruz.

The fourth species rises with a slender woody stalk, seven or eight feet high, armed with short recurved thorns: the leaves grow upon long foot stalks which are prickly, each sustaining two pairs of wings; the outer pair has two lobes which join at their base, and are rounded on the outside, but straight on the inner edges, shaped like a pair of sheep-shears; they are much larger than the inner, are almost two inches long, and one inch broad in the middle: from the place where these are inserted into the stalk, come out small branches, which have three or four globular heads of pale purplish flowers coming out from the side, on short peduncles: and the principal stalk has many of those heads of flowers on the upper part for more than a foot in length; and this, as also the branches, is terminated by similar heads of flowers: the pods are broad, flat, jointed, opening by two valves, containing one, two, or three compressed orbicular seeds: the leaves move but slowly when touched, but the foot-stalks fall when they are pressed very hard. It is a native of Brazil.

The fifth has the roots composed of many hairy fibres, which sit close together, from which come out several woody stalks, which decline towards the ground, unless they are supported; they are armed with short recurved spines, and have winged or pinnate leaves, composed of four, and sometimes five pinnas, whose bases join at a point, where they are inserted into the foot-stalk, spreading upwards like the fingers of a hand: the flowers from the axils, on short peduncles, collected in small globular heads, of a yellow colour: the pods short, flat, jointed, in close clusters; almost covered with stinging hairy covers. It is a native of Brazil.

The sixth species has the spike roundish, nodding: the flowers ten-stamened, and yellow; the lower ones of the spike without stamens or petals. It is a native of the West Indies, flowering in July and August.

The seventh rises with upright branching stalks six or seven feet high, becoming woody towards the root, with callous dots dispersed upon it, but not perennial (at least they are not so here in any situation, the plants always decaying in winter); they are smooth, and the leaves are composed of four or five pairs of long winged lobes, which have about twenty pairs of small leaves ranged along the midrib; are smooth and rounded at their points, of a full green on their upper side, but pale on their under: these small leaves contract themselves together on their being touched, but the foot-stalks do not decline at the same time, as those do which are titled Humble Plants; it is therefore called the Sensitive Plant by way of distinction: the flowers are produced upon long foot-stalks, which come out from the wings of the leaves, and are disposed in globular heads which nod downward, are yellow; and all those which have petals have ten stamina in each, but those situated round the border have neither petals nor stamina; those on the upper part of the spike are succeeded by pods an inch and a half long, and a quarter of an inch broad, which change to a dark brown when ripe, inclosing three or four compressed, shining, black seeds. It is probably a native of America.

The eighth species has the stems seldom more than two feet and a half high, and smooth: the leaves are composed of three or four pinnae, which are shorter, and the leaflets much narrower than in the first and seventh sorts; the heads of the flowers are smaller, being made up of many long white filaments, forming altogether a round head, and the pods longer and narrower, an inch long, and a quarter of an inch broad, with a round protuberance at each seed. It grows naturally in all the islands of the West Indies, where it has its name from the leaves not contracting on being touched.

The ninth species has a shrubby erect stalk about five feet high, hairy and armed with short, broad, strong thorns, which are white, standing on each side, almost opposite, or alternate: the leaves five or six-paired, with a strong midrib, and between each pair two short strong spines, pointing out each way: the leaflets extremely narrow and very close: towards the upper part of the stalk the flowers are

produced from the sides on short peduncles; they are collected into globular heads, and are of a bright purple colour: the stalks are also terminated by smaller heads of the like flowers: the pods flat, jointed, about two inches long, and a quarter of an inch broad, spreading like rays, there being commonly five or six joined together at the base: they separate at each articulation, leaving the two side membranes or borders standing: the seeds, which are compressed and square, drop out from the joints of the pods, which are hairy at first, but as they ripen become smooth: the petioles do not fall on being touched, but the leaflets close up. It is a native of La Vera Cruz.

The tenth has the stem recurved, prickles scattered over it in pairs: the leaves commonly six-paired, with many paired pinnas: on the universal petioles there are recurved prickles between each of the partial ones; and there is a straight upright prickle which is longer, between each pair of the partial ones, in place of a gland: the heads are globular: the legumes membranaceous-compressed, jointed, rugged. It is a native of South America.

The eleventh species has the spikes globular, large, peduncled: the flowers white, apetalous, ten-stamened: the legumes long, flat. It flowers in April, and the seeds ripen in autumn; found at La Vera Cruz.

The twelfth is a tree which seldom exceeds twelve feet in height: it has numerous branches forming a pyramidal figure: the leaves are small; the flowers are small, yellow, and void of scent, in a close cylindrical spike, an inch and a half long: the legumes coriaceous, containing a buttery pulp, in which the seeds are rolled up: the spines are very singular, subaxillary and connate at the base, resembling the horns of oxen; brown, shining, hollow, and the longest more than five inches in length; they are all over the tree; and when the pods are ripe and the leaves fallen, they have a singular appearance. It is a native of Carthagera, flowering in June and July, and ripening seeds in September.

The thirteenth species has the branches angular, smooth, with a brown bark: the leaves sometimes two from the axil of the spines: partial four or five-paired, inner shorter, with leaflets from five to

seven-paired, outer eight to eleven-paired: leaflets linear, acute, smooth: the spines in pairs white, purple at the tip: the flowers in a globular head, axillary and solitary, first sessile, then peduncled, shorter than the leaves: the legumes compressed, and attenuated at the base. .It is a native of the East and West Indies, &c.

The fourteenth has the flowers many-stamened, very fragrant, yellow, in sessile heads: the petioles have a gland below the leaflets: the legumes are fusiform. On account of the sweetness of its flowers, it has been dispersed through most parts of Europe. It is brought by the Italian gardeners, who bring over Orange-trees, &c. in young plants, under the name of *Gazia*. It is a native of Saint Domingo, flowering from June to August.

The fifteenth species is a tree which arrives at a large size in countries where it grows naturally, but in this climate is rarely seen more than eight or ten feet high: it has the habit of the fourteenth sort; differing in having no callous dots upon the branches: the bark is purple: the spines in pairs, and longer than those of the fourteenth: the branches purple, even: the partial leaves about five pairs; between two pairs of the outer ones a gland is inserted into the common petiole: the legumes necklace-shaped, compressed: the joints roundish-rhomb-shaped: flowers many-stamened, in peduncled heads. It is a native of Egypt and Arabia. It is the tree which yields the Gum Arabic.

The sixteenth has leaves simple, linear, and pungent or hard and prickly at the end, and growing in whorls six or seven together; but it has dissimilar leaves, and the primordial ones, or two or three first leaves which appear on the seedling plants, are bipinnate. It is a native of New South Wales, flowering from March to May.

According to Mr. Curtis, it is some years in arriving at its flowering state.

The seventeenth is a lofty tree, with an upright smooth trunk, covered with an ash-coloured bark: the branches diverging, bent down, smooth: the partial leaves twelve-paired: the universal petiole round, striated, ferruginous-pubescent: partial petioles also ferruginous: the glands roundish, concave, between the petioles: the scale-

lets bifid, minute, at the base of the partial petioles: pinnas sixteen or eighteen-paired, halved, subsessile, acute, entire, smooth: the spikes peduncled, subglobular, composed of aggregate, sessile, white flowers: the peduncles axillary, and slender: the seeds spherical, shining black. It is a native of Jamaica, where it is called *Mountain or Wild Tamarind Tree*.

The eighteenth has the leaves destitute of glands: the pinnas from twelve to twenty, an inch in length: the bundles of flowers peduncled: the legume a span long. It is cultivated in the gardens at Cairo, where it flowers in June, and becomes a large tree. It is probably a native of Egypt.

The nineteenth has the bractees half-cordate: the peduncles in threes: the flowers in heads: an obsolete gland on the common petiole below the partial pinnas: the germs are globular, two-valved; with two roundish, concave or hemispherical leaflets: the leaves very smooth. It is a native of the West Indies, flowering most part of the summer.

The twentieth species has the branches with few recurved prickles: the leaves four or five-paired: a gland between the lowest partial ones, which are twelve-paired, but the lowest pinnule wants the opposite on the inside: on the common petiole are two remote prickles, underneath between each partial one: the stipules wide, acuminate, purple: the legumes very wide. It is a native of America.

In the twenty-first, the leaves divide into many ramifications: the leaflets are roundish, and placed in very regular order: the seeds, which are flat, and one half of a beautiful red colour, the other half of a deep black, grow in long twisted pods, and hanging by a small thread for some time out of the pod, when they are ripe, make a very agreeable appearance. It was brought from the Bahama Islands.

The twenty-second species is frutescent, being a large procumbent branching shrub: the panicle very much branched, naked, terminating the stem and branches: the prickles small, scattered over the stem and panicle: the leaves having from twelve to twenty pairs of partial leaves, with an oblong melliferous pore at the base

of the general petiole: the leaflets linear and almost capillary: there are no prickles on the petioles or peduncles, but a gland above the base of the petioles: the flowers white, polygamous, in a vast diffused terminating panicle, of very many small globular heads. It is a native of the East Indies.

The bark is there converted into a sort of tow, which is used for stopping cracks both in houses and boats.

The twenty-third sort has the flowers many-stamened, sessile: the leaves are like those of the Walnut; and the flowers are purple. It is a native of South America.

The twenty-fourth has also purple flowers, and is a native of South America.

The twenty-fifth is a tree with rigid branches, that are flexuose from bud to bud: under each bud is a pair of horizontal, whitish, stipular thorns, the length of the leaves: the leaves are petioled, conjugate, or one-paired, with pinnate, six-paired leaflets: the common petiole terminated above by a gland, beneath by a prickle: the leaflets oblong-linear, blunt, at equal distances, the lowest smaller: the legume oval, a hand in length and half as much in breadth, compressed, with large scattered seeds. It is a native of the Cape.

The twenty-sixth climbs to the tops of the tallest trees, to the height of one hundred and fifty feet, frequently overspreading many of the neighbouring branches, and forming large arbours: the withs are slender, but tough and flexible, striated, stiff, and smooth: common petioles long, opposite, thickened at the base, round, very smooth, terminating in a tendril, by which the branches are supported: the pinnae four-paired, petioled, oblong, blunt at top, emarginate, nerved, smooth on both sides, shining: the glands none: the tendril long, upright, bifid at the end: the spikes axillary, erect, very long, many-flowered: the flowers approximating, subsessile, small: most of them are abortive; and according to Browne, the female plants throw out their flowers separate, and are succeeded by so many pods. It is a native of both Indies, and in the West Indies is called *Cocoon*.

The twenty-seventh species is in height three or four feet: the

branches alternate, upright, angular, with a very tough smooth bark: the leaves of the young seedlings in pairs and pinnated, with oval leaflets: but when the stem rises, the common footstalks of its leaves become dilated, the leaflets cease to appear, and the whole shrub is furnished only with such dilated naked footstalks, which are to all intents and purposes leaves: they are alternate, vertical, smooth, firm and glaucous: the stipules none: on their upper edge near the base a small concave gland: the racemes are axillary, solitary, erect, of about six alternate heads, each having three or four small white flowers: the pod linear, pointed, zigzag, brown, with a very thick margin: the seeds about six, oblong: the flowers on the young branches are very numerous, and fragrant, like those of *Spiræa Ulmaria*. It is a native of New South Wales.

It produces ripe pods, and perfect seeds in the stove, but in the green-house the flowers go off without any tendency to produce fruit. It is a shrub of quick growth, and which blows very readily.

According to Mr. Curtis, the foliage is usually edged with red.

In the twenty-eighth the branches are most acutely triangular, and much compressed: their edges bright red: the leaves alternate, four or five inches long, with a rib and margin like the last: the flowers in axillary racemes, yellowish white, fragrant: the petals four: stamens numerous: the young capsules smooth and glaucous. It is a native of New South Wales.

Culture.—They are all capable of being increased by seed, and some of the sensitive kinds by layers and cuttings, but the first is by much the best method.

The seed, procured from the nurseries or seed-shops, should be sown in pots of light rich mould early in the spring, covering it in with fine earth a quarter of an inch deep, and plunging the pots in the hot-bed; if in a common hot-bed under frames and glasses, managing them nearly in the manner of tender annuals, and when in a bark-bed in the stove, little trouble is required. But moderate sprinklings of water should be given; and when the plants are two or three inches high, they should be planted out singly into small pots, preserving the earth to their roots, replunging them in the hot-

bed, &c. giving water and occasional shade till they are well rooted, repeating the waterings frequently. The plants should afterwards be continued either in the hot-bed under glasses, or plunged in the bark-bed of the stove, to facilitate their growth, preserve them in vigour, and increase the sensibility of the Sensitive kinds; admitting fresh air pretty freely.

The perennial sorts, both shrubby and herbaceous, must be kept in the stove all winter, and principally the year round.

And they must be frequently removed into larger pots to prevent the roots from getting through the pots, which they are apt to do, and by that means are often destroyed.

The *Acacia* kinds are the most tender, requiring the stove almost constantly, except a little in the heat of summer, when they must be placed in a warm situation.

They should always have a bark hot-bed, and be put in very small pots filled with sandy mould, the heat of the stove being kept up to above temperate: as the leaves of some of them are shed, they have often the appearance of being dried when that is not the case.

Where there is not the convenience of a stove, those who are curious to have the plants, may have them in summer, by the aid of a common dung or tan-bark hot-bed under frames and glasses, though not in winter; by raising some of the annual, or any of the other kinds, by seed in spring, in a hot-bed under a frame, &c. keeping up the heat of the bed until the middle of June, and continuing the plants always under the frame, raising one end of the lights a little, occasionally, in warm days to admit fresh air; and as they rise in height, raise the frame at bottom, to allow them full room to grow. About Midsummer, or soon after, some of the low spreading kinds may likewise be turned out with balls, or plunged in their pots into a warm sunny border, and covered with large hand-glasses, which may be lifted off occasionally just to view the plants. By these methods the plants may be preserved through the summer in their sensitive quality, though not equal in perfection to those in stoves; nor can they be preserved alive in winter out of the stove.

The shrubby kinds that afford spreading branches may be layed

any time in summer, in pots plunged in the bark-bed, where they then take root, and are ready to pot off singly in the autumn season.

The Sensitive and Humble sorts often branch out profusely, so as to furnish plenty of young shoots for cuttings, which should be planted in pots in the summer season, plunging them in the bark-bed, where they often readily take root, and form good plants.

These modes should, however, only be practised when seed cannot be procured.

The general culture of all the species is afterwards to keep them always in pots placed in the stove, being plunged occasionally in the bark-bed, especially the Spreading Sensitive kinds, frequent waterings being given in summer and winter, but considerably the most in the summer season; shifting them into larger pots as they increase in growth. And although most of the sorts will live in the open air in the heat of summer, it is the best practice to expose them but sparingly.

The fourth and fifth sorts are held in high estimation on account of the singular sensibility lodged in their leaves; which, in consequence of being touched or shaken, either by the hand, a stick, or the least wind blowing upon them, the wings of the leaves suddenly close, and the foot-stalks fall down.

The periods of time which the leaves, &c. require to recover themselves, after falling from any irritation, are according to the vigour of the plant, the hour of the day, the serenity of the atmosphere, and the temperature of the heat of the stove, &c. being often from ten or fifteen minutes to an hour or more.

The plants also every evening naturally contract themselves, and expand again in the morning. They are all ornamental and curious.

3. MONARDA DIDYMA.

SCARLET MONARDA.

THIS genus contains plants of the fibrous-rooted herbaceous flowery biennial and perennial kinds.

It belongs to the class and order *Diandria Monogynia*, and ranks in the natural order of *Verticillata*.

The characters are: that the calyx is a one-leafed tubular perianthium, cylindric, striated, with a five-toothed equal mouth, permanent: the corolla unequal: tube cylindric, longer than the calyx: border ringent: upper lip straight, narrow, linear, entire; lower lip reflex, broader, trifold; middle segment longer, narrower, emarginate; lateral blunt: the stamina have two bristle-shaped filaments, the length of the upper lip, in which they are involved; anthers compressed, truncate at top, convex below, erect: the pistillum is a four-cleft germ: style filiform, involved with the stamens: stigma bifid, acute: there is no pericarpium: calyx containing the seeds at the bottom: the seeds four, roundish.

The species cultivated are: 1. *M. fistulosa*, Purple Monarda; 2. *M. oblongata*, Long-leafed Monarda; 3. *M. didyma*, Scarlet Monarda, or Oswego Tea; 4. *M. rugosa*, White Monarda; 5. *M. punctata*, Spotted Monarda.

The first has a perennial root, composed of many strong fibres, and spreading far on every side: the stems, near three feet high, are hairy and obtuse-angled; they send out two or four small side branches towards the top: the leaves oblong, broad at the base, but terminating in acute points, hairy, a little indented on their edges, on short hairy foot-stalks: the stem and branches terminating by heads of purple flowers, which have a long involucre, composed of

five acute-pointed leaves. It is a native of Canada, flowering from June to August.

The second species differs from the first, in having the leaves ovate at the base, and a little attenuated, and more villose underneath. It is a native of North America, flowering from July to September.

The third has a perennial root the stems about two feet high, smooth, acute-angled: the leaves indented on the edges, on very short foot-stalks; when bruised they emit a very grateful refreshing odour: towards the top of the plant come out two or four small side branches, with smaller leaves of the same shape: the flowers are produced in large heads or whorls at the top of the stalk, and there is often a smaller whorl at a joint below the head; and out of the head arises a naked peduncle, sustaining a small head or whorl: the flowers are of a bright red colour. They come out in July; and in a moist season, or when the plants grow in a moist soil, they continue till the middle or end of September. It is a native of North America.

The fourth species resembles the following, but the leaves are longer, smooth, wrinkled a little like those of Sage, and the flowers white. It is a native of North America, flowering from July to September.

The fifth has stems about two feet high, branching out from the bottom to the top: the leaves lanceolate, coming out in clusters at each joint, where there are two larger leaves, and several smaller ones on each side; the larger leaves are two inches and a half long, three quarters of an inch broad, and slightly indented on their edges: towards the upper part of the stem the flowers come out in large whorls, with an involucre to each whorl composed of ten or twelve small lanceolate leaves, of a purplish red colour on their upper side (four larger, and four smaller, besides the leaves of the whorls): the flowers are pretty large, of a dirty yellow colour spotted with purple. It is a biennial plant; and a native of Maryland and Virginia, flowering here from June to October.

Culture.—All these plants may be increased by parting the roots, and some of them by slips and cuttings as well as seeds.

As the first sort does not increase fast by the roots, the seeds may be sown in the autumn on a bed of good earth, and in the following summer the plants be removed into nursery rows half a foot apart, in a rather shady situation, and in the beginning of the following autumn set out where they are to remain and flower. They succeed best in a soft loamy soil not too much exposed.

The roots should be divided either in the autumn or very early in the spring; but the former is the better, being afterwards either planted out in rows to remain till they are strong, or, when strong, at once to where they are to remain.

Strong slips or cuttings of the branches may be taken off in the beginning of summer, and planted out in a shady border, due shade and water being given till well rooted, when in the autumn they may be removed to where they are to remain.

The third sort succeeds best in a light soil, in an eastern situation.

They all afford ornament in the borders and clumps of pleasure-grounds.

PLATE XXXVII.

1. NIGELLA DAMASCENA.

LOVE IN A MIST. DEVIL IN A BUSH.

THIS genus contains plants of the hardy herbaceous flowering annual kind.

It belongs to the class and order *Polyandria Pentagynia*, and ranks in the natural order of *Multisiliquæ*.

The characters are: that there is no calyx: the corolla has five petals, ovate, flat, blunt, spreading, more contracted at the base: the nectaries eight, placed in a ring, very short; each two-lipped; outer lip larger, lower, bifid, flat, convex, marked with two dots; inner lip shorter, narrower, from ovate ending in a line: the stamina have numerous awl-shaped filaments, shorter than the petals. Anthers compressed, blunt, erect: the pistillum has several germs (five to ten), oblong, convex, compressed; erect, ending in styles which are awl-shaped, angular, very long, but revolute, permanent: stigmas longitudinal, adnate: the pericarpium capsules as many, oblong, compressed, acuminate, connected on the inside by the suture, gaping on the inside at top: the seeds very many, angular, and rugged.

The species cultivated are: 1. *N. damascena*, Common Fennel-flower; 2. *N. sativa*, Small Fennel-flower; 3. *N. arvensis*, Field Fennel-flower; 4. *N. Hispanica*, Spanish Fennel-flower; 5. *N. orientalis*, Yellow Fennel-flower.

The first rises with an upright branching stalk a foot and a half high: the leaves much longer and finer than those of the third: the flowers are large, pale blue, with a five-leaved involucre under each, longer than the flower; they are succeeded by larger swelling seed-



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Nigella Damascena.
1 Love in a mist. Devil in a bush.

Narcissus Jonquilla.
2 Jonquill.

vessels, with five horns at the top. It is a native of the South of Europe, flowering from June to September.

From the fine cut leaves about the flower, it has the names of *Fennel-flower*, *Devil-in-a-bush*, and *Love-in-a-mist*; but the first is become obsolete.

There is a variety with single white flowers, and another with double flowers, which is frequently cultivated in gardens with other annuals for ornament.

The second species rises to the same height as the preceding: the leaves are not so finely cut, and are a little hairy: at the top of each stalk is one flower, composed of five white petals, which are slightly cut at their end into three points; these are succeeded by oblong swelling seed-vessels with five horns at the top, filled with small pale-coloured seeds. It is a native of Candia and Egypt, flowering from June to September.

The third rises with slender stalks near a foot high, either single or branching out at the bottom, and having a few very fine-cut leaves, somewhat like those of Dill. Each branch is terminated by one star-pointed flower, of a blue colour, without any leafy involucre: they are succeeded by capsules, having five short horns, inclining different ways at the top, and are filled with rough black seeds. It is a native of Germany, &c. flowering from June to September.

There is a variety with white flowers, and another with double flowers.

The fourth species rises near a foot and half high; the lower leaves are finely cut; but those on the stalks are cut into broader segments: the flowers are larger than those of the other species, and of a fine blue colour, with green veins at the back: the nectaries of a sea-green colour: the pistils are of equal length with the petals; they with the stamens are of a deep purple or puce colour: the capsule has five horns, and is of a firmer texture than any of the other. It grows naturally in Spain and the South of France, flowering from June to September.

There is a variety with double flowers.

The fifth rises with a branching stalk a foot and half high; with pretty long leaves, finely divided: the flowers are produced at the end of the branches: the petals are yellowish; at the base of these are placed eight nectaries, between which arise a great number of stamens, with an unequal number of germs, from five to eight or nine, oblong and compressed: the capsules are joined together on their inner side, terminate in horns, open longitudinally, and contain many thin compressed seeds, having borders round them. It is a native of Syria, flowering from July to September.

Culture.—They are all increased by sowing the seeds on light earth where the plants are to remain, as they seldom succeed well when transplanted in patches at proper distances; and when the plants are come up, they should be thinned, leaving only three or four in each patch, keeping them afterwards clear from weeds.

The best season for sowing is March; but if some be sown in August, soon after they become ripe, on a dry soil and in a warm situation, they will abide the winter, and flower strong the succeeding year. By sowing the seeds at different times, they may be continued in beauty most part of the summer season.

As they are all annual plants, they require to be raised every year.

The varieties with double flowers are chiefly introduced into flower gardens.

They afford ornament and variety among other annuals in the clumps and borders.

2. NARCISSUS JONQUILLA.

JONQUIL.

THIS genus contains plants of the bulbous-rooted perennial flowering kind.

It belongs to the class and order *Hexandria Monogynia*, and ranks in the natural order of *Spathaceæ*.

The characters are: that the calyx is an oblong spathe, obtuse, compressed, opening on the flat side, shrivelling: the corolla has six ovate, acuminate petals, flat, equal, inserted into the tube of the nectary externally above the base: nectary one-leafed, cylindric-funnel-form, coloured on the border: the stamina have six awl-shaped filaments, fixed to the tube of the nectary, shorter than the nectary: anthers oblongish: the pistillum is a roundish germ, obtusely three-sided, inferior: style filiform, longer than the stamens: stigma bifid, concave, obtuse: the pericarpium is a roundish capsule, obtusely three-cornered, three-celled, three-valved: the seeds are many, globular, and appendicled.

The species cultivated are: 1. *N. pseudo-narcissus*, Common Daffodil; 2. *N. poeticus*, Poetic, or White Narcissus; 3. *N. biflorus*, Two-flowered Narcissus, or Pale Daffodil; 4. *N. bicolor*, Two-coloured Narcissus; 5. *N. minor*, Least Daffodil: 6. *N. triandrus*, Rush-leaved Narcissus, or Reflexed Daffodil; 7. *N. orientalis*, Oriental Narcissus: 8. *N. Bulbodocium*, Hoop-Petticoat Narcissus: 9. *N. tazetta*, Polyanthus Narcissus; 10. *N. serotinus*, Late-flowering Narcissus; 11. *N. odorus*, Sweet-scented Narcissus, or Great Jonquil; 12. *N. calathinus*, Calathine Yellow Narcissus; 13. *N. jonquilla*, Common Jonquil.

The first has a large bulbous root, from which come out five or six flat leaves, about a foot long, and an inch broad, of a grayish

colour, and a little hollow in the middle like the keel of a boat: the stalk rises a foot and half high, having two sharp longitudinal angles; at the top comes out one nodding flower, inclosed in a thin spathe: the corolla is of one petal, being connected at the base, but cut almost to the bottom into six spreading parts; in the middle is a bell-shaped nectary, called by gardeners the cup, which is equal in length to the petal, and stands erect: the petal is of a pale brimstone or straw colour, and the nectary is of a full yellow: the seeds are roundish, black. It is a native of many parts of Europe, flowering in March.

There are varieties with white petals and a pale yellow cup, with yellow petals and a golden cup, with a double flower: with three or four cups within each other; Tradescant's large double; long-tubed flowered; short-tubed; dwarf-stalked; and the peerless Daffodil.

Many other varieties have likewise been noticed by writers.

The second species has a smaller and rounder bulb than the first: the leaves are longer, narrower, and flatter: the stalk or scape does not rise higher than the leaves, which are of a gray colour: at the top of the stalk comes out one flower from the spathe, nodding on one side: the corolla snow white, spreading open flat, the petals rounded at the points: the nectary or cup in the centre is very short, and fringed on the border with a bright purple circle: the flowers have an agreeable odour, appear in May, and seldom produce seeds. It is a native of Italy, &c. flowering in April.

There are varieties with double white flowers, with purple-cupped flowers, and with yellow-cupped flowers.

The third usually produces two flowers: it frequently occurs, however, with one, more rarely with three; in a high state of culture it probably may be found with more. When it has only one flower, it may easily be mistaken for one of the varieties of the second sort, but may be distinguished from it by the petals being of a yellowish hue, or rather a pale cream colour; the nectary wholly yellow, not having the orange or crimson rim, and by its flowering at least three weeks earlier; the top also of the flowering stem very soon after it emerges from the ground bends down and becomes elbowed; where-

as in that it continues upright till within a short time of the flower's expanding. It is a native of several parts of Europe, flowering in May.

There are two or three varieties, as with sulphur-coloured flowers, and with white reflexed petals, with gold-coloured borders.

The fourth species resembles the first; but the petals are white, the nectary is dark yellow and larger, with a spreading, waved, notched border. Gouan thinks it is easily distinguished by its leaves, which are scarcely a palm in length and half an inch in breadth; by its large flower, with cordate-ovate petals, imbricate at the base, and sulphur-coloured, and by the nectary having a reflex mouth, twelve-cleft or thereabouts, the lobes also being toothed and curled: the scape is the length of the leaves, or a little shorter, and thick. It is a native of the South of Europe, flowering in April and May.

There is a large variety, which approaches in its general appearance very near to the first sort; but it is a much taller plant, and has its leaves more twisted, as well as more glaucous: the flower, but especially the nectary, is much larger, and the petals are more spreading. It is of a fine deep yellow colour, having sub-varieties with double flowers, and is a native of Spain, flowering in April. It is sometimes known by the title of Great Yellow *Spanish-Bastard Daffodil*.

The fifth is nearly related to the first sort, but is three times smaller in all its parts: the scape is scarcely striated: the spathe is greenish: the flowers more nodding: the petals distinct at the base, lanceolate, straight, not oblique or ovate: the margin of the nectary six-cleft, waved, curled. But though the flowers are not so large as those of the other species, when the roots are planted in a cluster, they make a very pretty show, and have this advantage, that they flower somewhat earlier than any of the others. It is a native of Spain.

The sixth is of the same size with the second, but the leaves are narrower by half and channelled: the spathe one-flowered: the whole corolla snow-white: the petals ovate-oblong: the nectary bell-shaped, shorter by half than the corolla, with the margin straight, and un-

equally crenulate: the stamens three, seldom six: the anthers dark yellow, shorter than the nectary. In nurseries the flowers are of a pale yellow, having two and sometimes three flowers from a spathe. It is a native of Portugal.

There are varieties with cup and petals wholly of a gold colour; with yellow, with a white cup; and with white, with a yellow cup.

The seventh species is broad-leaved, having the appearance of the ninth sort: the corolla is white: the nectary erect, half or one-third of the length of the petals, trifid, yellow, with the lobes emarginate. It is a native of the Levant, flowering in May.

There are several varieties.

The eighth has small bulbs: the leaves very narrow, having some resemblance to those of the Rush, but a little compressed, with a longitudinal furrow on one side; they are seldom more than eight or nine inches long: the flower-stalk slender, taper, about six inches long: petal scarce half an inch long, cut into six acute segments: the nectary or cup is more than two inches long, very broad at the brim, lessening gradually to the base, formed somewhat like the old farthingale or bell-hoop petticoat worn by the ladies. It is a native of Portugal, flowering in April or May.

The ninth species has a large, roundish bulb: the leaves three or four, long, narrow, plane: the scape or flower-stalk upright, broadish, angular, concave, from ten or twelve to eighteen inches in height: the flowers six or seven to ten from one spathe, very fragrant, clustered, white or yellow. It is a native of Spain and Portugal, &c., flowering in February and March.

There are a great many varieties: the principal of which are; with yellow petals, with orange, yellow, or sulphur-coloured cups or nectaries; with white petals, with orange, yellow, or sulphur-coloured cups or nectaries; with white petals, with white cups or nectaries; and with double flowers of the different varieties.

The flower catalogues contain about a hundred sub-varieties under these heads. It may be observed, that "the varieties with white petals and white cups are not so much esteemed as the others; there are, however, two or three with large bunches of small white

flowers, which are valuable for their agreeable odour, and for flowering later than most of the others. There is also one with very double flowers, the outer petals white, those in the middle some white, others orange-coloured," which "has a very agreeable scent, flowers early, and is generally called the *Cyprus Narcissus*," and is the most beautiful of all the varieties when blown in glasses in rooms or other places.

The tenth has a small bulb: the leaves few, narrow: the stalk jointed, nine inches high: the corolla white, cut into six narrow segments: the cup yellow. It flowers late in the autumn, and is a native of Spain, Italy, and Barbary.

The eleventh species has the flower deep yellow, three times as large as that of the ninth, sometimes one only from a spathe, but frequently more: the nectary not fringed, but divided at the mouth into six blunt lobes. It possesses more fragrance than many of the others. It is a native of the South of Europe, flowering in April and May.

It varies with double flowers.

The twelfth resembles the ninth very much, but the petals are a little larger and sharper; the nectary is the same length with the petal; the leaves two or three, a foot or more in length: the stem is slender, strong, a foot in length: the flowers two or three from a spathe, very elegant, large and loose: the petals yellow: the cup half an inch long, sinuated at the edge, of a deeper yellow colour. It flowers in April, and is a native of the southern parts of Europe and of the Levant.

The thirteenth is named from the narrowness of its leaves, like those of Rushes; there are two or three of them usually on a plant, and they are angular, fleshy, and almost round: the scape is round, hollow, producing at top from three to five flowers from a spathe, sometimes no more than two, very fragrant petals orbiculate or mucronate, both they and the cup yellow: the bulb small, white, covered with dark membranes. It is a native of Spain, flowering in April and May.

It varies with double flowers.

Culture.—All these different species and varieties may be increased with facility, by planting the off-set bulbs from the roots; and by sowing the seed in order to procure new varieties, which is chiefly practised for the fine sorts of Polyanthus Narcissus.

For this last purpose the seed should be carefully saved from the best and most curious plants after being perfectly ripened.

The seed should be sown soon after it becomes ripe, as about the beginning of August, in shallow boxes or flat pans perforated with holes in the bottoms, and filled with fresh light sandy earth, being covered about a quarter of an inch deep with fine sifted mould, and placed in such situations as are only exposed to the morning sun, till the beginning of winter, when they should be removed to have the full sun, and be sheltered from severe weather. In the spring, when the plants appear, they should be occasionally watered in dry weather, and be screened from the mid-day heat, removing them into cooler situations as the warm season advances, keeping them free from all sorts of weeds. Towards the latter end of the summer, when their stems decay, the surface mould of the boxes or pans should be stirred or wholly removed, and some fresh mould sifted over the plants, being careful not to disturb the roots, and keeping them rather dry in a shaded place.

They should have the same management annually, till the period of their leaves decaying in the third summer, when the bulbs should be taken up, and the largest separated and planted out on raised beds of light fine mould, in rows six inches apart, and three or four distant in them, having the depth of two or three inches. The smaller bulbs may be covered in on another bed with fine mould, to remain till of sufficient size to be planted out as above.

They should afterwards be kept clean; and when they show flowers so as to ascertain their properties, they may be removed, and managed in the manner directed below.

The off-set bulbs of the old plants, especially the double sorts, should be separated from the roots annually, or at furthest every two or three years, in the latter part of the summer, when their leaves and stems decay, planting their larger bulbs out at different times, from

the end of August to the beginning of November, in order to afford variety; but the earlier they are planted the stronger they blow. When left out of the ground till February, or later, they mostly appear weak.

They succeed best where the soil is of a light, dry, fresh, hazel, loamy quality, and the aspect south-easterly; as where inclined to moisture they are very apt to be destroyed.

They afterwards only require to be kept free from weeds, and to have the ground stirred above them in the autumn.

The small bulbs may be planted out in rows in nursery-beds to increase for being planted out in the same manner.

When these roots are planted in the open borders or other places, in assemblage with other bulbous flowers, they should be deposited in little patches, about three or four roots in each, putting them in with a blunt dibble, or holing them in with a garden-trowel, three or four inches deep; in which mode they display their flowers more conspicuously than when planted singly.

Where a large quantity are planted out alone in beds in order to exhibit a full bloom, as often practised with the fine *Polyanthus-Narcissus*, Jonquils, &c. the beds should be four feet wide, with foot-and-half or two-feet wide alleys between them; in these beds the roots should be planted in rows length-ways, nine inches asunder, either with a blunt dibble or with a hoe, three or four inches deep; and six distant in each row, covering them evenly with the earth, and raking the surface smooth.

In order to blow the *Polyanthus-Narcissus* and Jonquil in the highest perfection, curious florists often bestow particular care in their culture: some, preparing beds of compost, as for the fine Hyacinths, &c. managing them in the same manner. But they succeed well in beds of light dry mould.

Where the bulbs of this sort are intended for sale, they should be lifted at furthest every two years, to prevent their becoming flattened by pressure, and of course less valuable.

The bulbs may be retained out of the ground two or three months where it is necessary; but it is better to replant them as above.

Culture in Glasses.—It is sometimes the practice to cultivate the *Polyanthus Narcissus* and some of the large *Jonquil* kind in glasses in rooms, in order to blow in the winter or early spring season. For this purpose dry firm bulbs should be chosen, and one placed in each single glass or bottle provided for the purpose, any time from October till the spring, being then filled up to the roots of the bulbs with soft water, and deposited in a light warm place: in this method the plants soon begin to grow, and send forth flower-stems, affording good flowers, which have a very ornamental appearance.

The principal circumstances to be regarded in this management are, those of keeping the glasses well supplied with fresh portions of water, so as constantly to be up to the lower part of the roots, and changing the whole, so as to keep it always in a pure state.

They may likewise be raised in pots filled with light sandy mould, and placed in the same situations.

Also in hot-houses, they may be made to blow early, when kept either in pots or glasses.

When planted out in the manner mentioned above, in the borders, clumps, and other parts of pleasure-grounds, they are most of them highly ornamental, producing much variety in the early spring months.

All the different principal sorts may be procured from the seedsmen in London, who import them for sale from Holland, where they are raised in large quantities.



Painted by Syd Edwards

London Published Apr 1 1850 by G Kearsley Fleet Street

Engraved by F. Sanfem

1 *Nelumbium speciosum*
Chinese Water Lily

2 *Nolana prostrata*
Trailing Nolana

PLATE XXXVIII.

1. NELUMBIUM SPECIOSUM.

CHINESE WATER-LILY.

See *NYMPHŒA*.

2. NOLANA PROSTRATA.

TRAILING NOLANA.

THIS genus contains a plant of the herbaceous trailing annual kind.

It belongs to the class and order *Pentandria Monogynia*, and ranks in the natural order of *Asperifoliæ*, or *Luridæ*.

The characters are: that the calyx is a one-leafed perianthium, turbinate at the base, five-parted, five-cornered: segments cordate, acute, permanent: the corolla is one-petalled, bell-shaped, plaited, spreading, somewhat five-lobed, twice as large as the calyx: the stamina have five awl-shaped filaments, erect, equal, shorter than the corolla: anthers sagittate: the pistillum is as five roundish germs: style among the germs, cylindric, straight, the length of the stamens: stigma capitate: the pericarpium properly none: (drupes five, decumbent, three or five-celled:) the seeds five, with a succulent rind, roundish, with the inner base naked, immersed in the receptacle, two-celled and four-celled (solitary).

The species is *N. prostrata*, Trailing Nolana.

It has an annual root, simple, filiform, often three feet long, blackish: the stem a foot long, herbaceous, prostrate, roundish, very smooth, with white dots scattered over it the branches alternate, the lower ones the length of the stalk: the leaves alternate, two to-

gether, reflex, rhomb-ovate, quite entire, blunt, somewhat fleshy, an inch long, somewhat papulose, even, flat, veined, unequal, alternately larger and smaller. According to Miller they come out single at some joints, by pairs at others, and frequently three or four at the upper joints: the petioles ancipital, scarcely shorter than the leaves, smooth, those belonging to the upper leaves vaguely ciliate: the peduncles lateral, solitary, spreading a little, an inch long, one-flowered, round, thicker at top, hairy: the flowers inferior. It is a native of Java.

Culture.—These plants may be raised by sowing the seeds on a hot-bed in March. When the plants are fit to remove, they should be planted out singly into small pots filled with light earth, plunging them into a fresh hot-bed to bring them forward. When their flowers open in the summer, as July, they should have a large share of air admitted when the weather is warm, to prevent their falling away without producing seeds. Under this management the plants often continue flowering till the early frosts destroy them, and ripe seeds are produced in the beginning of the autumn.

They afford variety among other tender annuals.



Painted by S. Edwards

London Published Aug 1st 1805. by G. Kearsley Fleet Street

Engraved by F. Santen

Oenothera fruticosa
1 Shrubby oenothera

Origanum dictamnus
2 Dittany of Crete

PLATE XXXIX.

1. OENOTHERA FRUTICOSA.

SHRUBBY OENOTHERA.

THIS genus contains plants of the herbaceous, biennial, perennial and under shrubby perennial kinds.

It belongs to the class and order *Octandria Monogynia*, and ranks in the natural order of *Calycanthemæ*.

The characters are: that the calyx is a one-leafed, superior, deciduous perianthium: tube cylindrical, erect, long, deciduous: border four-cleft: the segments oblong, acute, bent down: the corolla has four petals, obcordate, flat, inserted into the interstices of the calyx, and the same length with the divisions of the calyx: the stamina have eight awl-shaped filaments, curved inwards, inserted into the throat of the calyx, shorter than the corolla: anthers oblong, incumbent: the pistillum is a cylindrical germ, inferior: style filiform, the length of the stamens: stigma four-cleft, thick, blunt, reflex: the pericarpium is a cylindrical capsule, four-cornered, four-celled, four-valved, with contrary partitions: the seeds very many, angular, naked: the receptacle columnar, free, four-cornered, with the angles contiguous to the margin of the partitions.

The species cultivated are: 1. *O. biennis*, Broad-leaved Tree-Primrose; 2. *O. longiflora*, Long-flowered Tree-Primrose; 3. *O. mollissima*, Soft Tree-Primrose; 4. *O. fruticosa*, Shrubby Tree-Primrose; 5. *O. pumila*, Dwarf Tree-Primrose.

The first has a biennial fusiform fibrous root, yellowish on the outside, white within: from this, the first year, arise many obtuse leaves, which spread flat on the ground; and from among which, the second year, the stems come out, three or four feet high, upright,

of a pale green colour, the thickness of a finger, not hollow but pithy, angular, slightly pubescent and rugged, tinged with purple, especially towards the bottom, branched alternately almost from the ground: the root-leaves run down into a three-sided petiole an inch in length: the stem-leaves sessile, bright lightish green, pubescent on both sides, waved a little about the edge, and having a few small teeth near the base: they are from five to seven inches in length and two inches in breadth, having a considerable midrib running the whole length, very wide and tinged with purple towards the base, at the back very prominent, with white nerves springing from it, and curved towards the point: the flowers are produced all along the stalks on axillary branches, and in a terminating spike: the leaves on the former are similar to the stem-leaves, but much smaller, being not more than two inches long, and little more than half an inch in breadth: the flowers are solitary, each being separated by a leaflet or bract, wider in proportion at the base than the proper leaves, and drawn more to a point, diminishing gradually towards the top of the spike, till they become linear, scarcely half an inch in length, and a line in breadth.

It is observed that the flowers usually open between six and seven o'clock in the evening, whence the plant is called Evening or Night-Primrose: the uppermost flowers come out first in June, the stalk keeping continually advancing in height, and there is a constant succession of flowers till late in autumn. It is a native of North America. The roots are said to be eaten in some countries in the spring season.

The second species has also a biennial root: the root-leaves are numerous, broad-lanceolate, toothletted, pubescent, with a white rib, obliquely nerved: the stems usually five, springing out below the root leaves, quite simple, ascending, rough-haired, green, with long spreading white hairs: the central stem grows up later: the stem-leaves are ovate-oblong, sessile, like the root-leaves: the flowers axillary from the upper leaves, with the germ and calyx hairy. It is remarked by Curtis, that luxuriant specimens exceed five feet in height, that the flowers are uncommonly large and showy, and

continue blowing from July to October. It is a native of Buenos Ayres.

The third has a shrubby stalk more than two feet high, hairy, with narrow-lanceolate sessile leaves, a little waved on their edges, and ending in acute points: the flowers are axillary like the other sorts, at first pale yellow, but as they decay changing to an orange colour, smaller than those of the first sort: the seed-vessels slender, taper, hairy. It is also a biennial plant, and a native of Buenos Ayres, flowering from June to October.

The fourth species is a perennial, but altogether herbaceous, at least here, and therefore improperly named *fruticosa*: the flowers, which are large and showy, though they open in the evening, remain expanded during most of the ensuing day: the flower-buds, germ, and stalk, are enlivened by a richness of colour which contributes to render this species one of the most ornamental and desirable. It is a native of Virginia.

The fifth has also a perennial fibrous root: the lower leaves ovate, small, close to the ground: the stalk slender, near a foot high: the leaves smaller, light green, sessile, ending in blunt points: the flowers small, bright yellow: it sends out many flowering-stems, producing blossoms from April to July, opening in the morning as well as evening. It is a native of North America.

Culture.—These plants are all capable of being raised from seeds, and some of them by parting the roots and cuttings.

The seed should be sown either in the autumn or early spring, in the first and third sorts, upon a bed or border in the open ground, thinning and watering the plants properly, and keeping them free from weeds till the following autumn, when they may be removed with balls of earth about their roots to the places where they are to remain. Or some may be set out at the time of thinning in nursery-rows, six inches apart.

They also rise without trouble from the scattering of the seeds.

In the second sort, the seed should be put into the ground in the open borders or other parts, about the latter end of March, where the plants are to remain. One plant is sufficient in a place, which

should have a stick set to support its branches when they have advanced a little.

The fourth sort may be readily increased by sowing the seeds as above, and by parting the roots and cuttings of the young branches, planting them out in the open borders or other places where they are to grow in the autumn, for the first method, and the spring for the latter, giving water as there may be occasion.

In the fifth sort, the seeds should be sown in pots of light earth in the autumn, plunging them in a hot-bed frame during the winter. When the plants have attained proper growth in the spring, they should be removed into separate pots, which should be protected in the following winter under a garden frame. And some may be planted out in the open ground, where they often succeed in mild winters.

The parted roots should be planted out in the spring, either in pots or the open ground.

The plants raised from seed are in general the best, as flowering more strongly.

By cutting down the stems of the plants in the first year of their flowering before they perfect their seeds, the plants may sometimes be rendered more durable.

The first two sorts, as has been seen, are biennial, and the others perennial; the former should of course be raised annually.

They are all proper for affording ornament and variety, either in the open ground or among other potted plants. The second and third sorts are often considered as green-house plants, but they succeed well in the open ground.

2. ORIGANUM DICTAMNUS.

DITTANY OF CRETE.

THIS genus affords plants of the herbaceous annual and under-shrubby perennial kinds.

It belongs to the class and order *Didynamia Gymnospermia*, and ranks in the natural order of *Verticillata*.

The characters are: that the calyx is a spiked involucre, composed of imbricate, ovate, coloured bractes: perianthium unequal, various: the corolla one-petalled, ringent: tube cylindrical, compressed: upper lip erect, flat, blunt, emarginate: lower trifold, the segments almost equal: the stamina have four filiform filaments, the length of the corolla, of which two are longer: anthers simple: the pistillum is a four-cleft germ: style filiform, inclined to the upper lip of the corolla: stigma very slightly bifid: there is no pericarpium: calyx converging, fostering the seeds at bottom: the seeds four, ovate.

The species cultivated are: 1. *O. vulgare*, Common Marjoram; 2. *O. onites*, Pot Marjoram; 3. *O. majorana*, Sweet or Knotted Marjoram; 4. *O. heracleoticum*, Winter Sweet Marjoram; 5. *O. Ægyptiacum*, Egyptian Marjoram; 6. *O. dictamnus*, Dittany of Crete or Candia.

The first has a perennial, creeping, horizontal, brown root, tufted with numerous fibres: the stem a foot, eighteen inches, or near two feet in height, upright, somewhat woody, a little downy, and often tinged with purple: the branches opposite, upright, more tender than the stalk, in other respects similar: the leaves are ovate, pointed, finely and thinly toothed, above nearly smooth, beneath downy, dotted on both sides, the edges finely ciliate, spreading: the petioles downy: axils of the leaves, in the cultivated plant, bear numerous

smaller leaves. It is an aromatic and ornamental plant, growing wild in thickets and hedges, chiefly in a calcareous soil; and flowering from the end of June through the following month. It is found in most parts of Europe.

There are varieties with white flowers and light-green stalks; with purple flowers and with variegated leaves; which is sometimes cultivated in gardens under the title of *Pot Marjoram*, used in soups.

The second species has the habit of Sweet Marjoram, but it is woody: the stems woody, perennial, a foot and half high, branched, spreading, with long hairs; the leaves small, subsessile, acute, thinly serrate, tomentose on both sides; with rudiments of branches from the axils: the spikes heaped, as in the third sort, but oblong, by threes on each peduncle, the middle ones sessile, villose: the flowers are white, appearing in July. It is a native of Sicily.

The third has a biennial brown root, with many long tough fibres: the stems numerous, woody, branched, a foot and half high: the leaves are downy, entire, pale green, petioled: the flowers small, white, appearing successively between the bracteal leaves, which are numerous, and form roundish compact terminating spikes. It begins to flower in July, when it is cut for use, and called *Knotted Marjoram*, from the flowers being collected into roundish knotted close heads. It is probably a native of China.

The fourth species has a perennial root, from which arise many branching stalks a foot and half high, hairy, and inclining to a purplish colour: the leaves ovate, obtuse, hairy, greatly resembling those of Sweet Marjoram, on short foot-stalks: the flowers in spikes about two inches long, several arising together from the divisions of the stalk: the flowers are small, white, peeping out of their scaly covers. It grows naturally in Greece, &c.

It is at present commonly known by the name of *Winter Sweet Marjoram*, but was formerly called *Pot Marjoram*, being chiefly used for nosegays, as coming sooner to flower than Sweet Marjoram.

There is a variety with variegated leaves.

The fifth is a perennial plant with a low shrubby stalk, seldom rising more than a foot and half high, dividing into branches: the

leaves roundish, thick, woolly, hollowed like a ladle; they are like those of common Marjoram, but of a thicker substance, and have much the same scent: the flowers are produced in roundish spikes, closely joined together at the top of the stalks, and at the end of the small side branches; they are of a pale flesh colour, peeping out of their scaly coverings. It is a native of Egypt, flowering from June to August.

The sixth species is also a perennial plant: the stalks hairy, about nine inches high, of a purplish colour, sending out small branches from the sides by pairs: the leaves round, thick, woolly, very white; the whole plant has a piercing aromatic scent, and biting taste: the flowers are collected in loose leafy heads of a purple colour, nodding, and small. It is a native of the island of Candia, flowering from June to August.

Culture.—The four first sorts may be readily increased by slips, cuttings, and parting the roots, and in the first and third sorts also by seeds.

The seed should be procured fresh from the seed-shops, and be sown in the early spring months, as March or the following month, on a bed or border of good light mould, raking it in lightly. When the plants are up and have attained a few inches in growth, they should be planted out during moist weather, in a warm dry situation, in rows ten or twelve inches distant, to remain, water being given occasionally till they become perfectly rooted. When the plants are designed for the borders or clumps, the seeds may be sown in patches where the plants are to remain.

The roots of the strongest plants may be parted so as to have some root-fibres to each in the early autumn or spring season, and be planted out in rows in the same manner as those raised from seed; having the same management afterwards till fresh rooted. The slips or cuttings of the branches should be taken off in the summer, and immediately planted out where the plants are to remain.

All the sorts should be afterwards kept perfectly clean from weeds during the summer season, and in the autumn have the decayed stalks cleared away, loosening the mould about the plants;

and when in beds, digging the alleys and throwing a little of the earth over the beds.

When necessary the plants may be removed into the pleasure ground, with small balls of earth about their roots, either in the autumn or early spring.

The other tender kinds may be increased by planting slips or cuttings of the young shoots, in the spring and summer months; in the former season in pots of light earth, plunging them in a mild hot-bed, but in the latter either in pots or warm shady borders; water being immediately given and occasionally repeated in small proportions, being covered down by hand-glasses in the latter case, to expedite their rooting; being removed when the plants begin to shoot at the top. In the autumn the plants may be removed into separate small pots, and afterwards treated as the more hardy plants of the green-house kind.

The three first sorts are useful as culinary plants, as well as ornamental in the borders of the pleasure ground: and the other kinds afford variety in the green-house collections.



Painted by Syd. Edwards

London Published June 1.1806 by G.Kearsley Fleet Street.

Engraved by E. Sangster

1 *Primula veris.*
Oxlip.

2 *Paeonia tenuifolia.*
Fine leaved Peony

PLATE XL.

1. PRIMULA VERIS.

OXLIP.

THIS genus contains plants of the low fibrous-rooted herbaceous flowery perennial kind.

It belongs to the class and order *Pentandria Monogynia* and ranks in the natural order of *Preciæ*.

The characters are: that the calyx is a many-leaved involucre, many flowered, very small: perianthium one-leaved, tubular, five-cornered, five-toothed, acute, erect, permanent: the corolla monopetalous: tube cylindrical, the length of the calyx, terminated by a small hemispherical neck: border spreading, half-five-cleft: segments obcordate, emarginate, obtuse: throat pervious: the stamina have five very short filaments, within the neck of the corolla: anthers acuminate, erect, converging, included: the pistillum is a globular germ: style filiform, the length of the calyx: stigma globular: the pericarpium is a capsule cylindrical, almost the length of the perianth, covered, one-celled, opening with a ten-toothed top: the seeds numerous, roundish: receptacle ovate-oblong, free.

The species cultivated are: 1. *P. vulgaris*, Common Primrose; 2. *P. elatior*, Great Cowslip or Oxlip; 3. *P. officinalis*, Common Cowslip or Paigle; 4. *P. farinosa*, Bird's-eye Primrose; 5. *P. longifolia*, Long-leaved Bird's-eye Primrose; 6. *P. cortusoides*, Cortusa-leaved Primrose; 7. *P. marginata*, Silver-edged Primrose; 8. *P. Auricula*, Auricula or Bear's-ear.

The first has a perennial root, growing obliquely, appearing as if bit off at the end, beset with thick reddish scales which are the remains of past leaves, sending down numerous very long round

whitish fibres; it has a singular smell, somewhat like that of anise: the leaves are obovate-oblong, about a hand's-breadth in length, nearly upright, tapering to the base, blunt, veiny, wrinkled, smooth above, hirsute beneath, rolled back at the edge when young, slightly waved, unequally notched, the midrib whitish, terminating in a foot-stalk of a reddish colour, channelled on one side and keeled on the other: the scapes or peduncles numerous, the length of the leaves, upright, round, hirsute, pale green, having awl-shaped bractes at the base, after the flowering is over bending back: the flowers upright, large, sweet-scented: the corolla is of a pale sulphur colour; each of the five clefts obcordate, and marked at the base with a spot of a much deeper yellow: the mouth has a faint rim round it. The flower of the wild Primrose is a pale brimstone colour; but in some places it is found of a purple hue.

The varieties are numerous, being partly wild and partly produced by cultivation. The principal of which are: the Common Yellow-flowered: the White: the Paper-white: the Red: the Double Yellow: the Double White: the Double Red: the Double Pink: the Double Crimson Primrose. It is a native of most parts of Europe, flowering in March and April with the Wood Anemone.

It is observed, that a fine flower of this sort should possess a graceful elegance of form, a richness of colouring, and a perfect symmetry of parts. The properties are mostly similar to those which distinguish the Auricula, in what relates to the stem or scape, the peduncles or flower-stalks, and the formation of the umbel, bunch or thyrs, vulgarly termed the *truss*: the tube of the corolla above the calyx should be short, well filled at the mouth with the anthers, and fluted termination rather above the eye: the eye should be round, of a bright clear yellow, and distinct from the ground colour: the ground colour is most admired when shaded with a light and dark rich crimson, resembling velvet, with one mark or stripe in the centre of each division of the border, bold and distinct from the edging down to the eye, where it should terminate in a fine point: the petals, technically termed the pips, should be large, quite flat, and perfectly circular, excepting the small indentures between each

division, which separate it into five (sometimes six) heart-like segments: and the edging should resemble a bright gold lace, bold, clear and distinct, and so nearly of the same colour as the eye and stripes, as scarcely to be distinguished from it.

The second species has the leaves contracted towards the middle, almost as in the Cowslip: the scapes few, erect, longer than the leaves, many-flowered: the flowers umbelled, pedicelled, the outer ones generally nodding; like those of the Primrose in form and colour, but smaller. From which it is evidently distinguished by its many-flowered scape; as it is from the cowslip by the flat border of the corolla. It is found in the woods and other places in this country, flowering in April and May.

Martyn remarks that if it be a variety, it is rather of the former than the latter. And Dr. Smith rather inclines to think that it is a hybrid production, or mule from a Primrose impregnated by a Cowslip.

It varies much in the colour of the flowers, but the chief are purple-flowered, red-flowered, gold-coloured, orange-coloured, with various shades of each.

The third has a root like that of the Primrose, but smelling more powerfully of anise: the leaves obovate-oblong, contracted suddenly towards the middle, or rather ovate with the petiole winged, shorter than those of the Primrose by nearly one-half, fuller at the edge, which is somewhat folded as well as notched, stronger, of a deeper green, not running so taper at the base, covered on the under side with softer and shorter hair: the petioles smoother, whitish with scarcely any red in them: the scapes few, three or four times longer than the leaves, round, upright, pale, villose: the involucre at the base of the umbel, surrounding the peduncles, consisting of many, very small, concave, pale, acuminate leaflets: the flowers in an umbel, unequally pedicelled, hanging down, generally to one side, full yellow with an orange-coloured blotch at the base of each segment, contracted about the middle of the tube, where the stamens are inserted, paler underneath, very fragrant. It is a native of Europe, flowering in April and May.

The varieties are the Common Single Yellow Cowslip: Double Yellow Cowslip: Scarlet Cowslip: and Hose, and Hose Cowslip.

The fragrant flowers of these plants make a pleasant wine, approaching in flavour to the muscadel wines of the south of France. It is commonly supposed to possess a somniferous quality.

The fourth species has a perennial root, somewhat præmorse, with numerous, long, perpendicular fibres, and sweet-scented: the leaves obovate-lanceolate, bright green, smooth and even, thickish, here and there turned back on the edges, underneath veined and powdered with white meal: the scape a hand's-breadth or span in height, far exceeding the leaves, round, upright, stiff and straight, of a pale green colour and mealy: the flowers sweet-scented, of a purple yellow colour, in an upright umbel, having at its base a many-leaved involucre, each leaflet of which is awl-shaped, and placed at the base of each peduncle. It is an elegant plant; is a native of many parts of Europe, flowering in July and August.

It varies in the size of the plant, having been found wild a foot and half in height, and in the cultivated plant a tendency to become viviparous, has been observed by Curtis, or to produce one or more tufts of leaves among the flowers of the umbel. In its wild state it seeds readily, and frequently when cultivated: the flowers also vary with different shades of purple, and have been found entirely white.

The fifth bears a great affinity to the fourth, but the leaves differ in form, colour, and mode of growth; when fully grown being twice the length of those of the other: they are not mealy, the under side being as green as the upper, and they have a greater tendency to grow upright: the scape is shorter and thicker: the flowers form a similar umbel, but each is smaller, and in point of colour much less brilliant. Upon the whole, though superior in size, it is inferior to that in beauty. It flowers early in May.

The sixth species, in the wrinkled appearance of its foliage, approaches the first sort; whilst in its inflorescence, the colour of its flowers, and solitary scape, which rises to an unusual height, it bears an affinity to the fourth. In the winter it loses the leaves

entirely, and forms a sort of bulbous hybernacle under ground: this circumstance is necessary to be known, as it subjects the plant to be thrown away as dead. It flowers in June and July; and is a native of Siberia.

The seventh, in its farinaceous tendency, accords with the eighth sort, but is very unlike it in its wild state, the leaves being much narrower: the flowers larger, and of a different colour: the colour of the flowers approaches to that of lilac: it becomes mealy, particularly on the edges of the leaves, between the serratures, where it is so strong as to make the leaf appear with a white or silvery edge. It is a delicate pretty plant, with a pleasing musky smell, and flowers in March and April. It is probably a native of the Alps.

The eighth species has the leaves fleshy, succulent, with the edges mealy, serrated; or entire, according to some—deeply and equally toothed all round, as others affirm; while some say that the young leaves are entire: the adult ones serrate above the middle: the petioles leafy or winged: the leaflets of the involucre unequal, wide, lanceolate or blunt: the flowers very sweet, four or five in an upright umbel; the calyx one-third of the length of the tube of the corolla, bell-shaped, toothed, mealy, as is also the scape: the tube of the corolla gradually widening upwards, not contracted at the neck: the border concave: the segments emarginate but not deeply, and not cut to the neck: the most common colours are yellow or red, but it is found also purple and variegated, with a white eye powdered with meal: capsule spherical or nearly so, flatted a little at top, of a coriaceous-cartilaginous substance, sprinkled with meal. It is a native of the mountains of Switzerland, Austria, &c. flowering in April and May.

It varies much in the leaves and flowers; as the oblong-leaved; roundish-leaved; broad-leaved; narrow-leaved; green-leaved; white or meal-leaved; the purple-flowered, of various shades and variegations; red-flowered, with different shades and variegations; yellow-flowered, of different shades; double purple-flowered; double yellow-flowered; variegated purples, &c.

With regard to the properties of a fine auricula, they are these

according to Martyn: "The stem should be strong, upright, and of such a height as that the umbel of flowers may be above the foliage of the plant: the peduncles or foot-stalks of the flowers should also be strong, and of a length proportional to the size and quantity of the flowers; which should not be less than seven in number, that the umbel may be regular and close: the tube, eye, and border should be well proportioned; which they will be, if the diameter of the first be one part, of the eye three, and the whole border six parts or thereabouts: the circumference of the border should be round or nearly so, or at least not what is called starry: the anthers ought to be large, bold, and fill the tube well; and the tube should terminate rather above the eye, which should be very white, smooth and round, without cracks, and distinct from the ground-colour: the ground-colour should be bold and rich, and regular, whether it be in one uniform circle or in bright patches: it should be distinct at the eye, and only broken at the outer part into the edging: a fine black, purple, or bright coffee-colour, contrast best with the white eye: a rich blue, or bright pink is pleasing, but a glowing scarlet or deep crimson would be most desirable, if well edged with a bright green; this, however, can seldom be expected: the green edge is the principal cause of the variegated appearance in this flower, and it should be in proportion to the ground-colour, that is, about one-half of each: the darker grounds are generally covered with a white powder, which seem necessary, as well as the white eye, to guard the flower from the scorching heat of the sun's rays."

It is observed, that all flowers that want any of the above properties are turned out into the borders of the garden or rejected wholly by every good florist; for as there are varieties every year from seeds, the bad ones must make room for their betters: but in some the passion for new flowers so much prevails, that supposing the old flower to be greatly preferable to a new one, the latter must take place, because it is of their own raising.

Culture.—These beautiful plants are raised without much difficulty, by proper care and attention in their management with re-

spect to the parting of the roots, and the planting them out in their due season; they succeed best in a strong soil, and some of them, as the Primrose kind, in a shady situation.

Culture in the Polyanthus kinds.—These are all capable of being increased by seed and the parting of the roots, the former being the only method for obtaining new varieties or a large supply of plants. The seed should be collected from such flowers as have large upright stems, and which produce many flowers upon the stalk, being large, beautifully striped, open, flat, and not pin-eyed, as from such seed a great variety of good sorts may be expected; care should be however taken that no bad or common flowers stand near them, as they will be apt to debase them, by the admixture of their farina.

The seeds should be sown in boxes or large pots filled with light rich mould. The proper season for this business is in the autumn, or the early spring; but the former is the better, as by sowing then the plants come up well the same year, and are strong and fit to plant out the following spring, and are fine plants for flowering the second spring. In the first season the sowing should be performed as soon as possible after the seeds become well ripened, though some advise December as a good time; but when in the latter, or the spring season, it may be done in February, March, or the following month. The seed should be sown over the surface tolerably thick, being covered in very lightly, and the boxes or pots placed where they may have a little of the morning sun, but not by any means the mid-day heats. The plants may be much forwarded by the pots or boxes being plunged in a mild hot-bed; in the spring, when dry, they should be frequently refreshed with water, in very moderate proportions at a time, removing the plants more into the shade as the heat advances, as it soon destroys them. The autumn-sown plants should have a warm situation during the winter, or be protected from frosts or severe weather by glasses or other means.

In the spring or early summer the plants of the different sowings will be sufficiently strong to plant out, for which a bed or shady border should be prepared, and made rich by neat's dung, on which the plants should be set out about four or five inches distant in every

direction, care being taken to water them occasionally till well rooted, after which they only require to be kept free from weeds; and when they flower in the following spring the best flowers should be marked, and the rest be removed into the borders or other places for affording variety; and the valuable plants may be removed, when they have finished flowering, into the borders or beds where they are designed to flower and remain, in the same manner as above, watering them slightly till well rooted again. The roots afterwards require to be parted and removed annually, and the earth of the borders renewed, to prevent their degenerating.

It is necessary, in order to keep up a proper stock of plants, to raise new seedling plants every two or three years, as the old plants mostly decline in beauty after the third year.

In the latter method, the roots should be parted in the beginning of the autumn, as soon as the flowering is over, and it may likewise be done early in the spring; but the former is the best time, as the plants get stronger and flower better in the spring.

In performing the work the plants should be taken up out of the ground, and each bunch divided into several slips, not too small, unless where a great increase is wanted, being careful to preserve some root to each slip; they are then to be planted in a fresh dug border, enriched with dung as above, setting them five or six inches asunder, giving them water directly, and repeating it occasionally till they have taken good root. The approved sorts may in this way be easily preserved.

These plants are observed by the editor of *Miller's Dictionary* to be very liable to the depredations of snails and slugs, in the spring of the year; the plants and pots therefore should be carefully examined on all sides early in the morning. But their worst enemy is a small red spider or *Acarus*, which in summer forms its web on the under side of the leaves. These little insects, scarcely visible without a magnifying glass, cause the leaves to become yellow and spotted, and eventually destroy the plant: they multiply with such rapidity as to take possession of a whole collection in a very short time. Such plants as appear infected should therefore be immediately

selected from the rest, taken up, and soaked for two or three hours in a strong infusion of tobacco water, and then replanted in a fresh soil or compost, and removed to a situation at a distance from the former. But if the whole bed or border be overrun with this insect, it is best to take up all the plants, and, having soaked them, to plant them elsewhere. The bed or border should then be trenched up, and remain fallow to the next season, or be planted with another crop not liable to this calamity.

In their after-management, they are said to "blow at the same time, and require nearly the same treatment as Auriculas, both with respect to soil and situation; they are however more impatient of heat and drought, and more partial to shade and moisture. They may be set in the same sized pots, and in the same compost as the Auricula, only with the addition of more loam; or they may be planted on cool shady beds or borders, being very hardy, and seldom perishing in the coldest and wettest seasons, because their parent is a native of this country; but during the heats of summer they are frequently destroyed, unless proper precautions be taken. This dislike of heat seems to indicate," it is added, "that the Polyanthus is rather the offspring of the Primrose, which requires shade, than of the Cowslip, which grows in open pastures; though Mr. Miller seems to regard it as a variety of the latter."

The roots of the wild plants, when they can be procured, may be taken up, divided, and planted out in the autumn, when they will flower in the following spring.

The fourth sort readily seeds in its wild state, and also frequently when cultivated: but it is scarcely worth the pains to raise it from seed, since a strong root may be divided so as to form many plants; the best time for doing this is in the spring, soon after the leaves are expanded. Each off-set should be placed in a separate pot, filled with two parts of stiffish loam, and one part of light sandy bog earth, watering and setting them in the shade, under a north wall or paling, but not under trees, keeping them there during summer in pans of water, but in the autumn, as the wet season comes on, taking them out of the pans, and either laying the pots on their sides, or

placing them during winter under a common cucumber frame, to keep them from immoderate wet, which this plant cannot bear, although it be a native of boggy meadows. In the following, if not the same year, these plants will blow strong; and they should be thus treated every year, as they require to have their roots frequently parted.

The fifth sort is increased by parting the roots, either in September or at the beginning of March. It is hardy, of ready growth, and will succeed either in the pot or border, by guarding it from the sun in summer, and from severe frost and too much wet in winter.

The sixth species, which is yet a rare plant, must be treated with care, as the fifth sort, and may be raised from seeds, or increased by parting the roots; but it is apt to be lost if not well attended to.

The seventh sort is delicate, and should be placed in a pot of stiffish loam, mixed with one-third rotten leaves, bog-earth, or dung, and plunged in a north border, taking care that it does not suffer for want of water in dry seasons; as when thus treated it increases by its roots nearly as readily as the *Auricula*.

Culture in the Auricula kinds.—These plants may all be increased by seeds in order to procure new varieties, and by slipping the roots to increase the improved kinds.

In order to obtain good flowers from seeds, choice should be made of the best flowers, which should be exposed to the open air, that they may have the benefit of showers, without which they seldom produce good seeds: the time of their ripening is in June; which is easily known, by their seed-vessels turning to a brown colour, and opening, being then careful lest the seeds be scattered out of the vessel; as they will not be all fit to gather at the same time.

The proper soil for this sort of seed is good, fresh, light, sandy mould, mixed with very rotten neat's dung, or very rotten dung from the bottom of an old hot-bed; with which the pots, boxes, or baskets in which the seeds are to be sown should be filled; and having levelled the surface very smooth, the seeds should be sown, sifting over them a little rotten willow mould; then covering them with

a net or wire, to prevent cats or birds from scratching out, or burying the seeds so as to destroy them. Some persons never cover the seeds, but leave them on the surface, for the rain to wash them into the ground, which is often the best method. The boxes, &c. should then be placed so as to receive half the day's sun, during the winter season; but in the beginning of March be removed, where they may have only the morning sun till ten o'clock; for the young plants now soon begin to appear, which, if exposed to one whole day's sun only, are all destroyed. The proper season for sowing the seed is in the latter end of summer, or beginning of autumn, as about September, but they may be sown in the spring.

During the summer season, the plants in dry weather should be often refreshed with water, never giving them too great a quantity at once. In the July following, the plants will be large enough to remove, at which time a bed must be prepared, or boxes, filled with the above-mentioned soil, in which they may be planted about three inches apart, and shaded when in beds every day, till they are thoroughly rooted, as also in very hot dry weather; but if they are in baskets or boxes, they may be removed to a shady situation.

When planted in beds, there should be some rotten neats' dung laid about ten inches under the surface, and beaten down close and smooth: this will prevent the worms from drawing the young plants out of the earth, which they generally do where this is not practised. This dung should be laid about half a foot thick, which will entirely prevent the worms getting through it until the plants are well established in the beds; and the roots strike down into the dung by the spring, which makes their flowers stronger than usual: these beds should be exposed to the east, and screened from the south sun as much as is necessary.

In the spring following many of these flowers will show; when such of them as have good properties should be selected, which should be removed each of them into a pot of the same prepared earth, and preserved until the next season, at which time a judgment of the goodness of the flower may be formed; but those that produce plain-coloured or small flowers should be taken out, and

planted in borders in the out-parts of the garden, to make a show, or gather for nosegays, &c.; the others, which do not produce their flowers the same year, may be taken up, and set out into a fresh bed, to remain till their properties are known.

In the second method, the offsets or slips may be taken from the old roots, in the spring or autumn, and be planted into small pots filled with the same sort of earth as was directed for the seedlings, and during the summer season be set in a shady place, and must be often gently refreshed with water, and in the autumn and winter be sheltered from violent rains. In the spring following these plants produce flowers, though but weak; therefore, soon after they are past flowering, they should be put into larger pots, and the second year they will blow in perfection.

In order to obtain a fine bloom of these flowers, the plants should be preserved from too much wet in winter, which often rots and spoils them, letting them have as much free open air as possible; but not be too much exposed to the sun, which is apt to forward their budding for flower too soon; and the frosty mornings, which often happen in March, thereby destroying their buds, if they are not protected; to prevent which, those who are curious in these flowers place their pots in autumn under a common hot-bed frame, where, in good weather, the plants may enjoy the full air, by drawing off the glasses; and in great rains, snow or frost, be screened by covering them.

About the beginning of February, when the weather is mild, the upper part of the earth in the Auricula pots should be taken off as low as can be, without disturbing their roots, filling up the pots with fresh rich earth, which greatly strengthens them for bloom. As those plants which have strong single heads always produce the largest clusters of flowers, the curious florist should pull off the offsets as soon as it can be done with safety to their growing, to encourage the mother plants to flower the stronger; they should also pinch off the flowers in autumn, where they are produced, and not suffer them to open, that the plants may not be weakened by it. The pots should be covered with mats in frosty weather, during the time of

their budding for flower, lest the sharp mornings blight them, and prevent their blowing. When the flower-stems begin to advance and the blossom buds grow turgid, they must be protected from hasty rains, which would wash off their white mealy farina, and greatly deface the beauty of their flowers, keeping them as much uncovered as possible, otherwise their stems will be drawn up too weak to support their flowers, (which is often the case when their pots are placed near walls) giving them gentle waterings to strengthen them, but none of the water should be let fall into the centre of the plant, or among the leaves.

When the flowers begin to open, their pots should be removed upon a stage (built with rows of shelves, one above another, and covered on the top, to preserve them from wet: this should be open to the morning sun, but sheltered from the heat of the sun in the middle of the day): in this position they will appear to much greater advantage than when they stand upon the ground; for, their flowers being low, their beauty is hid; whereas, when they are advanced upon shelves, they are fully seen. In this situation they may remain until the beauty of their flowers is past, when they must be set abroad to receive the rains, and have open free air, in order to obtain seeds, which will fail if they are kept too long under shelter. When the seed is ripe it should be gathered when it is perfectly dry, and exposed to the sun in a window upon papers, to prevent its growing mouldy, letting it remain in the pods till the season for sowing.

It is observed by the editor of Miller's Dictionary, that "those who are very nice in raising Auriculas, direct the compost to be made of one half rotten cow-dung two years old; one sixth fresh sound earth of an open texture; one eighth earth of rotten leaves: one twelfth coarse sea or river sand; one twenty-fourth soft decayed willow wood; one twenty-fourth peaty or moory earth; one twenty-fourth ashes of burnt vegetables, to be spread upon the surface of the other ingredients. This compost is to be exposed to the sun and air, turned over once or twice, and passed as often through a coarse screen or sieve; then be laid in a regular heap from fifteen

to eighteen inches thick, and in this state remain a year, turning it over two or three times, and keeping it free from weeds."

It is added, that "the pots for Auriculas should be hard baked: the inner diameter of the top be six inches and a half, of the bottom four inches, and they should be about seven inches deep, for common-sized blooming plants: but smaller plants and offsets should have smaller shallower pots, and very large plants should have larger pots in proportion: the bottom should have a small degree of concavity, and the hole should be half an inch in diameter: the rims should project about half an inch, in order to take up and remove them with greater ease and safety. The pots should be buried in wet earth, or immersed in water three or four days or a week, before they are wanted, to take off their absorbent property."

In the after-management of the plants, they should be potted annually soon after bloom; curtailing their fibres, if grown very long, and cutting off the lower part of the main root if too long or decayed. The offsets at this season strike freely, and become well established before winter. The plants should be carefully examined, and where any unsoundness appears, be cut out entirely with a sharp penknife, exposing the wounded part to the sun, and when it is quite dry, applying a cement of bees-wax and pitch in equal quantities, softened in the sun or before a fire. If the lower leaves be yellow or dried up, they should be stripped off in a direction downwards. Having put the hollow shell of an oyster over the hole of the pot, three parts of it should be filled with compost, highest in the middle, placing the plant there, with its fibres regularly distributed all round; then filling the pot up with the compost, adding a little clean coarse sand close round the stem on the surface, and striking the bottom of the pot against the ground or table to settle the earth. The true depth of planting is within half an inch of the lowest leaves, as the most valuable fibres proceed from that part; and the offsets will be thereby encouraged to strike root sooner. When these have formed one or more fibres of an inch or two in length, they may, by means of a piece of hard wood, or by the fingers, be separated with safety, and planted round the sides of a

small pot, filled with the same compost, till they are sufficiently grown to occupy each a separate pot; if a small hand glass be placed over each pot it will cause the fibres to grow more rapidly; but if it be long continued, it will draw up and weaken the plants. And in the beginning of May, as soon as the operation of potting is finished, the plants should be placed in an airy, shaded situation, but not under the drip of trees. Here they may remain till September or October, when they should be removed into shelter.

The plants should, in the first favourable weather in February, be divested of their decayed leaves; and by the middle of that month earthing them up; that is, taking away the superficial mould of the pots about an inch deep, and putting in fresh compost, with the addition of a little loam, to give it more tenacity. This contributes greatly to the strength of the plants, and the vigour of their bloom; at the same time it affords a favourable opportunity to separate such offsets as appear to have sufficient fibre to be taken off at this early season. The pots with these offsets should be placed in a frame, in a sheltered situation, till their roots are established. Though frost, unless it be very rigorous, will not destroy the plants, it will injure them, and perhaps spoil the bloom, especially early in the spring; they should therefore be covered with mats in a severe season. When any plant has more than one or two principal stems, it is advisable to pinch off the smallest and weakest, in order to render the blossoms of that which remains larger and more vigorous. And when the flowers (pips) become turgid and begin to expand, the plants should be selected from the rest, removing them to a calm shady corner, suspending small hand-glasses over them.

In this culture the stages for the pots to stand on whilst in bloom should have a northern aspect, and should consist of four or five rows of shelves, rising one above another, the roof being covered with frames of glass; the tallest blowing plants being placed behind, and the shortest in front. The plants must be regularly watered two or three times every week during the blooming season.

All these plants are highly ornamental; the former in beds and borders, and the latter sorts among curious potted flowering plants.

2. PÆONIA TENUIFOLIA.

FINE-LEAVED PÆONY.

THIS genus comprises plants of the large herbaceous flowery perennial kind.

It belongs to the class and order *Polyandria Digynia*, and ranks in the natural order of *Multisiliquæ*.

The characters are: that the calyx is a five-leaved perianthium, small, permanent: leaflets roundish, concave, reflex, unequal in size and situation: the corolla has five roundish petals, concave, narrower at the base, spreading, very large: the stamina have numerous filaments, (about three hundred) capillary, short: anthers oblong, quadrangular, erect, four-celled, large: the pistillum consists of two ovate germs, erect, tomentose: styles none: stigmas compressed, oblong, blunt, coloured: the pericarpium has as many capsules, ovate-oblong, spreading and reflex, tomentose, one-celled, one-valved, opening longitudinally inwards: the seeds several, oval, shining, coloured, fastened to the opening suture.

The species are: 1. *P. officinalis*, Common Peony; 2. *P. tenuifolia*, Slender-leaved Peony.

The first has a thick large root, constituted of several thick fleshy tubers, hanging by strings to the main head, with upright round smooth stems, branching half a yard or two feet in height: the leaves are large, many-lobed, with oblong-oval spreading folioles: the flowers large, deep red or purple, on the terminations of the stalks.

There are two principal varieties: the Common Female and Male Peony.

The former of these has the roots composed of several roundish thick knobs or tubers, which hang below each other, fastened with

strings: the stalks are green, about two feet and a half high: the leaves composed of several unequal lobes, which are variously cut into many segments: they are of a paler green than those of the latter sort, and hairy on their under side: the flowers are smaller, and of a deeper purple colour.

The latter has the roots composed of several oblong knobs hanging by strings fastened to the main head: the stems the same height with the preceding: the leaves are composed of several ovate lobes, some of which are cut into two or three segments; they are of a lucid green on their upper side, but are hoary on their under: the stems are terminated by large single flowers, composed of five or six large roundish red petals.

The flowers in both sorts appear in May, and are natives of several parts of Europe, as Switzerland, Dauphiné, Carniola, Piedmont, Silesia, &c.

Miller says, that "it is scarcely necessary to observe that the old names of Male and Female have nothing to do here with the sexes, the flowers of both being hermaphrodite."

There are several subvarieties of the *Female Peony* with double flowers, differing in size and colour, cultivated in gardens. The *Male Peony* also varies with pale, and white flowers; and with larger lobes to the leaves: they also vary much in different countries.

"There is the *Foreign Peony*, with a deep-red flower: the roots are composed of roundish knobs, like those of the *Female Peony*: the leaves are also the same, but of a thicker substance: the stalks do not rise so high: the flowers have a greater number of petals, and appear a little later. It is a native of the Levant. The large double purple Peony is probably a sub-variety of this."

The *Hairy Peony*, with a larger double red flower: the roots like the common *Female Peony*; but the stalks taller, and of a purplish colour: the leaves much longer, with spear-shaped entire lobes: the flowers large, and of a deep red colour.

The *Tartarian*, with roots composed of oblong fleshy tubers of a pale colour: the stalks about two feet high, pale green: the leaves composed of several lobes, irregular in shape and size, some having

six, others eight or ten spear-shaped lobes, some cut into two or three segments, and others entire; of a pale green, and downy on their under side: the stalks are terminated by one flower of a bright-red colour, a little less than that of the common Female Peony, having fewer petals.

The *Portugal Peony*, with a single sweet flower, has not roots composed of roundish tubers, but has two or three long taper forked fangs like fingers: the stalk rises little more than a foot high: the leaves are composed of three or four oval lobes, of a pale colour on their upper side, and hoary underneath: the stalk is terminated by a single flower, which is of a bright red colour, smaller than the above, and of an agreeable sweet scent.

The second species has a creeping root, putting forth tuberous fibres, with tubercles the size of a hazel nut, white, fleshy, of a bitterish taste: the stem scarcely a foot high, and commonly single, but in the garden eighteen inches high, and several from the same root: the root-leaves none: the stem round, very obscurely grooved, smooth, as is the whole plant, naked at bottom, having there only a few sheathing scales: the leaves frequent, alternate, the upper ones gradually less, on a round petiole, channelled above, quinate: the leaflets cut into very many narrow segments: the upper leaves simply multifid: the flower sessile at the uppermost leaf, subglobular, accompanied by two leaflets, one multifid, the other simple, both dilated at the base. It is a native of the Ukraine.

Culture.—The single sorts are easily raised by seed, and the double by parting the roots.

The seed should be sown in autumn, soon after it is perfectly ripened, or very early in the spring, (but the former is the better season,) on a bed or border in the open ground where the soil is rather light, raking it in lightly. It may also be sown in small drills.

The plants should afterwards be properly thinned, kept perfectly free from weeds, and be occasionally watered when the weather is hot and dry.

As they should remain two seasons in the beds, it is necessary in

the second autumn to spread some light mould over them, to the depth of an inch: and in the autumn following they may be removed where they are to remain. Plants of the double-flowered kinds are often produced from these.

The roots of the old double-flowered plants may be taken up in the beginning of the autumn, and divided so as to have one bud or eye or more to each part, or crown, as without care in this respect they never form good plants. And where regard is had to the flowering, they should not be too much divided, or the off-sets made too small, as when that is the case they do not flower strong. But where a great increase is wanted, they may be divided more, being left longer in the nursery-beds.

They should be planted out as soon as possible after they are separated, though when necessary they may be kept some time out of the earth. The large off-sets may be set out at once where they are to remain; but the small ones are best set in nursery-beds for a year, or till of proper strength for planting out.

The plants may afterwards be suffered to remain several years unremoved, till the roots are increased to very large bunches, and then be taken up, when the stalks decay, in autumn, divided, and replanted in their allotted places in the manner directed above.

All the sorts are hardy plants, that are capable of flourishing in any common soil in almost any situation, either in open exposures or under the shade of trees.

The Portugal variety, however, should have a warmer situation and lighter soil than the others.

They are proper ornamental flowery plants for large borders, and may be had at all the public nurseries. In planting, one should be put here and there in different parts, placing them with the crowns of the roots a little within the surface of the earth, and at a yard at least distant from other plants, as they extend themselves widely every way, assuming a large bushy growth; and, together with their conspicuous large flowers, exhibit a fine appearance,

and are often planted at the terminating corners of large borders adjoining principal walls, displaying a bushy growth in their foliage and flowers. When the flowers are gone, the capsules opening lengthways discover their coloured seeds very ornamentally, especially in that called the Male Peony and varieties. And to forward this, the capsules may be slit open on the inside at the proper valve; whereby they will expand much sooner, and display their beautiful red seed more conspicuously.



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Pancratium maritimum.
1 Sea Pancratium.

Soldanella alpina
2 Alpine Soldanella

PLATE XLI.

1. PANCRATIUM MARITIMUM.

SEA PANCRATIUM.

THIS genus contains plants of the bulbous-rooted flowery perennial kind.

It belongs to the class and order *Hexandria Monogynia*, and ranks in the natural order of *Spathaceæ*.

The characters are: that the calyx is an oblong spathe, obtuse, compressed, opening on the flat side, shrivelling: the corolla has six petals, lanceolate, flat, inserted into the tube of the nectary on the outside above the base: nectary one-leafed, cylindric-funnel-form, coloured at top, with the mouth spreading and twelve-cleft: the stamina have six filaments, awl-shaped, inserted into the tips of the nectary, and longer than they are: anthers oblong, incumbent: the pistillum is a bluntly three-cornered germ, inferior: style filiform, longer than the stamens: stigma blunt: the pericarpium is a roundish capsule, three-sided, three-celled, three-valved: the seeds several, globular.

The species cultivated are: 1. *P. maritimum*, Sea Pancratium; 2. *P. Illyricum*, Illyrian Pancratium; 3. *P. Zeylanicum*, Ceylonese Pancratium; 4. *P. Mexicanum*, Mexican Pancratium; 5. *P. Caribæum*, Caribbean Pancratium; 6. *P. Carolinianum*, Carolina Pancratium; 7. *P. Amboinense*, Broad-leaved Pancratium; 8. *P. Verecundum*, Narcissus-leaved Pancratium.

The first has a large, coated, bulbous root, of an oblong form, covered with a dark skin: the leaves are shaped like a tongue; are more than a foot long, and one inch broad, of a deep green, six or seven of them rising together from the same root, encompassed at bottom with a sheath: between these arises the stalk, which is a foot

and a half long, naked, sustaining at the top six or eight white flowers, enclosed in a sheath, which withers and opens on the side, to make way for the flowers to come out.

According to Mr. Miller, the root resembles that of the Squill, but is less, covered with a brown skin, and white within, the coats pellucid and gently striped, viscid or full of a clammy juice, bitter to the taste without acrimony. It is a native of the South of Europe.

The second species has a large bulb, covered with a dark skin, sending out many thick strong fibres, striking deep in the ground: the leaves are a foot and half long and two inches broad, of a grayish colour: the scapes thick, succulent, near two feet high: the flowers six or seven, white, shaped like those of the first sort, but with a shorter tube, and much longer stamens. It flowers in June, and frequently produces seeds. It is a native of the South of Europe.

The third has a pretty large bulbous root: the leaves long and narrow, of a grayish colour, and pretty thick, standing upright: the stalk rises among them, a foot and a half high, naked, sustaining one flower at the top: the nectary is large, cut at the brim into many acute segments: the stamens long, and turning towards each other at their points; in which it differs from the other species: the flower has a very agreeable scent, but is of short duration. It is a native of Ceylon.

The fourth species has the stem or scape a long span in height, round, forked towards the top, or dividing into two peduncles, with two oblong tender membranaceous greenish leaflets, and terminated each with a white flower, divided to the very base into six narrow segments; in the middle of these is a white bell-shaped tube, which Linnæus names the nectary, more tender than the petals; the mouth angular, and from each angle putting forth a filament, long, slender and white, terminated by an oblong incurved saffron-coloured anther: the flowers have no smell, and shrivel up over the fruit: leaves four, reclining, smooth, pale green and somewhat glaucous, ridged, slightly grooved in the middle, and with a single streak on each side, otherwise veinless, a long span or a little more in length, an inch or

an inch and half in width, produced to a point at the end. It flowers in May.

The fifth has the leaves about a foot long and two inches broad, having three longitudinal furrows: the stalk rises about a foot high, then divides like a fork into two small foot-stalks, or rather tubes, which are narrow, green, and at first encompassed by a thin spathe, which withers, and opens to give way to the flowers: these are white, and have no scent. It is a native of the West Indies.

The sixth species has a roundish bulbous root, covered with a light brown skin, from which arise several narrow dark green leaves, about a foot long: among these comes out a thick stalk (scape) about nine inches high, sustaining six or seven white flowers, with very narrow petals, having large bell-shaped nectariums or cups, deeply indented on their brims: the stamens do not rise far above the nectarium. It is a native of Jamaica and Carolina.

The seventh has the bulb oblong, white, sending out several thick fleshy fibres, which strike downward: the leaves are on very long foot-stalks, some ovate, others heart-shaped, about seven inches long and five broad, ending in points, having many deep longitudinal furrows; they are of a light green, and their borders turn inwards: the stalk thick, round and succulent, rising near two feet high, sustaining at the top several white flowers, shaped like those of the other sorts; but the petals are broader, the tube is shorter, and the stamens are not so long as the petals: there is a thin sheath, which splits open longitudinally. It is a native of Amboyna.

There are several varieties: as the *American*, which grows naturally in the islands of the West Indies, where it is called *White Lily*; and the *latifolium* and *ovatum* also grow naturally in the same place.

The eighth species has the leaves a foot and a half long, half an inch wide: the scape erect, compressed, a foot high: the spathes oblong-lanceolate, acuminate, whitish, shrivelling; the outer larger, an inch and half in length: the flowers fragrant, on three-cornered pedicels, scarcely half an inch long. It is a native of the East Indies; flowering from June to August.

Culture.—All these plants are capable of being increased by

planting off-sets from the roots in the latter end of summer, when their stems and leaves decay. The roots may be divided every second or third year.

In the two first sorts, the off-sets may be planted out in nursery-beds for a year or two, to become sufficiently strong, when they may be removed into warm sheltered dry borders; the first being sheltered from frost in severe winters, and the latter in very severe weather, by being covered with tanner's bark, straw, or peas-haulm. The second sort may also be increased by seeds sown in pots, and plunged in a hot-bed.

The other sorts must be planted out in small pots filled with light earth, separately plunging them in the bark-bed of the stove. They should be kept constantly in the tan-bed, and have the management of other tender bulbs. In this way they generally succeed well.

The two first sorts afford variety in the dry warm borders of the pleasure-ground, and the other kinds produce variety as well as fragrance in the stove collections.

2. SOLDANELLA ALPINA.

ALPINE SOLDANELLA.

THIS genus contains a plant of the low herbaceous perennial kind.

It belongs to the class and order *Pentandria Monogynia*, and ranks in the natural order of *Preciæ*.

The characters are: that the calyx is a five-parted perianth, straight, permanent; segments lanceolate: the corolla one-petalled, bell-shaped, widening gradually, straight: mouth torn into many clefts, acute: the stamina have five awl-shaped filaments, anthers, simple, sagittate: the pistillum is a roundish germ; style filiform,

length of the corolla, permanent: stigma simple: the pericarpium is an oblong capsule, round, obliquely striated, one-celled, opening by a many-toothed top: the seeds numerous, acuminate, very small: the receptacle columnar, free.

The species is *S. alpina*, Alpine Soldanella.

It has a perennial fibrous root: the leaves almost kidney-shaped, about three quarters of an inch over each way, of a dark green colour, on long footstalks: among these arises a naked flower-stalk or scape, about four inches long, sustaining at the top two small open bell-shaped flowers, with the brim cut into many fine segments like a fringe: the most frequent colour is blue, but it is sometimes snow-white. It flowers in April, and the seeds ripen in July. It is a native of the Alps.

There is a variety which has all the parts smaller; the petiole is shorter and more slender, and the leaves are not so much rounded, but gradually widen from the petiole.

Culture.—This is increased by parting the roots in the autumn about September, planting them in pots or in a cool shady situation, where the soil is of a moist loamy kind, being frequently watered when the season is dry, and kept from the sun.

The seeds soon after they become ripe may also be sown in pots or boxes filled with the above sort of mould, being placed in the shade, and frequently watered. The plants rise in the spring, and in the autumn following should be removed into separate pots, to have the protection of a frame in winter. They succeed best in a northern aspect.

These plants afford variety among other potted plants.

PLATE XLII.

1. PAPAVER ORIENTALE.

EASTERN POPPY.

THIS genus contains plants of the hardy herbaceous fibrous-rooted annual and perennial kinds.

It belongs to the class and order *Polyandria Monogynia*, and ranks in the natural order of *Rhoeadeæ*.

The characters are: that the calyx is a two-leaved perianthium, ovate, emarginate: leaflets subovate, concave, obtuse, caducous: the corolla has four roundish petals, flat, spreading, large, narrower at the base; alternately less: the stamina have numerous filaments, capillary, much shorter than the corolla: anthers oblong, compressed, erect, obtuse: the pistillum has a roundish, large germ: style none: stigma peltate, flat, radiate: the pericarpium is a crowned capsule, with the large stigma, one-celled, half-many-celled, opening by many holes at the top under the crown: the seeds numerous, very small: receptacles, longitudinal plaits, the same number with the rays of the stigma, fastened to the wall of the pericarpium.

The species cultivated are: 1. *P. Somniferum*, White Poppy; 2. *P. Rhoeas*, Corn or Red Poppy; 3. *P. Cambricum*, Welsh Poppy; 4. *P. Orientale*, Oriental Poppy.

The first has the stalks large, smooth, five or six feet high, branching: the leaves large, grayish, embracing at the base, irregularly jagged on their sides: the flowers terminating, whilst enclosed in the calyx hanging down, but before the corolla expands becoming erect: the calyx is composed of two large oval grayish leaves, that separate and soon drop off: the corolla is composed of four large, roundish, white petals, of short duration; and succeeded by large roundish



Painted by Syd. Edwards

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Engraved by F. Sanfom.

1 *Papaver Orientale*
Eastern Poppy

2 *Pulmonaria virginica*
Virginian Lung-wort

heads as big as oranges, flatted at top and bottom, and having an indented crown or stigma: the seeds are white. It is a native of the southern parts of Europe, but probably originally from Asia.

There are several varieties, differing in the colour and multiplicity of their petals, which are preserved in gardens for ornament: the Single-flowered sort is chiefly cultivated for use.

The Common Black variety of Poppy has stalks about three feet high, smooth, and dividing into several branches: the leaves are large, smooth, deeply cut or jagged on their edges, and embracing: the petals purple with dark bottoms; succeeded by oval smooth capsules filled with black seeds, which are sold under the name of *Maw-seed*.

Of this there are many sub-varieties: as with large double flowers, variegated of several colours; with red and white, purple and white, and some finely spotted like Carnations.

There are few plants whose flowers are so handsome; but as they have an offensive scent, and are of short duration, they are not in general much regarded: they are annual, flowering in June.

The second species has the stem from one to two feet high, upright, round, branched, purplish at bottom, with spreading hairs, bulbous at the base: the leaves are sessile, forming a kind of sheath at bottom, hairy on both sides; the segments or leaflets unequally toothed or serrate, each tooth rolled back at the edge, callous at top, and terminated by a small spine: the peduncles long, round, upright, one-flowered, red, the hairs on it spreading horizontally. It is a native of every part of Europe, &c. flowering from June to August.

There is a variety with an oval black shining spot at the base of each petal, from which many beautiful garden sub-varieties are produced which have double flowers, white, red bordered with white, and variegated.

In the third the stalks are a foot high, and smooth: the pinnae of the leaves are deeply cut on their edges; and there are a few small leaves on the stalk shaped like the lower ones: the upper part of the stalk is naked, and sustains one large yellow flower, appear-

ing in June; being filled with small purplish seeds. It is a native of Wales, &c.

The fourth species has a perennial root, composed of two or three strong fibres as thick as a man's little finger, a foot and a half long, dark brown on the outside, full of a milky juice, which is very bitter and acrid: the leaves a foot long, closely covered with bristly white hairs: the stems two feet and a half high, very rough and hairy, having leaves towards the lower part like the root-leaves, but smaller: the upper part is naked, and sustains at the top one very large flower, of the same colour with the common red sort. It was found in Armenia, and flowers here in May.

There are a few varieties, differing in the colour of the flowers; and it is said that the flower is sometimes double, but with us it is always single.

Culture.—All the different sorts may be increased by seeds, and the two last sorts also by parting and planting out the roots.

The seeds should be sown in the autumn, or very early in the spring; (but the former is the better season), either in the places where the plants are to grow, or in beds, to be afterwards planted out. The first is probably the best method, as these plants do not bear removing well.

When they are cultivated for ornament, seed of the finest double sorts should be carefully provided and made use of, and be sown in patches.

In the practice of Mr. Ball, in cultivating the first sort for the purpose of preparing opium from it, "the seed was sown at the end of February, and again the second week in March, in beds three feet and a half wide, well prepared with good rotten dung, and often turned or ploughed, in order to mix it well, and have it fine, either in small drills, three in each bed, or broadcast; in both cases, thinning out the plants to the distance of a foot from each other, when about two inches high, keeping them free from weeds." They produced from four to ten heads each, and showed large flowers of different colours. "With an instrument something like a rake, but with three teeth, the drills may, he says, be made at once." He

found that the plants did not bear transplanting; as, out of 4000 which he transplanted, not one plant came to perfection.

The roots of the two last sorts may be divided in the autumn, or spring, (but the first period is the better,) leaving some root fibres to each parting, planting them out where they are to remain, as soon afterwards as possible.

In all the sorts the plants only require afterwards to be kept free from weeds, and those raised from seed properly thinned out.

They all afford ornament and variety in the clumps, borders, and other parts of pleasure grounds and gardens; and the first sort may sometimes be grown to advantage for the purpose of having the juice which it affords made into opium.

2. PULMONARIA VIRGINICA.

VIRGINIAN LUNG-WORT.

THIS genus furnishes plants of the hardy perennial fibrous-rooted kind.

It belongs to the class and order *Pentandria Monogynia*, and ranks in the natural order of *Asperifoliae*.

The characters are: that the calyx is a one-leaved perianthium, five-toothed, prismatic-pentagonal, permanent: the corolla one-petaled, funnel-form: tube cylindrical, the length of the calyx: border half-five-cleft, blunt, from upright-spreading: throat pervious: the stamina have five filaments, in the throat, very short: anthers erect, converging: the pistillum has four germs: style filiform, shorter than the calyx: stigma blunt, emarginate: there is no pericarpium: calyx unchanged, fostering the seeds at bottom: the seeds four, roundish, blunt.

The species cultivated are: 1. *P. officinalis*, Common Lungwort;

2. *P. angustifolia*, Narrow-leaved Lungwort; 3. *P. Virginica*, Virginian Lungwort.

The first has a perennial fibrous root: the lower leaves rough, about six inches long, and two inches and a half broad, of a dark green on their upper side, marked with many broad whitish spots, but pale and unspotted on their under side: the stalks almost a foot high, having several smaller leaves on them standing alternately: the flowers are produced in small bunches at the top of the stalks, of different colours. It is a native of Europe, flowering from March to May.

The second species has leaves much narrower than those of the first sort, and covered with soft hairs, not spotted: the stalks rise a foot high, and have narrow leaves on them, of the same shape with those below, but smaller, and almost embracing: the flowers are produced in bunches on the top of the stalks, of a beautiful blue colour. It is a native of Sweden.

It varies with white flowers.

The third has a perennial, thick, fleshy root, sending out many small fibres: the stalks a foot and half high, dividing at the top into several short branches: the leaves near the root four or five inches long, two inches and a half broad, smooth, of a light green, on short footstalks; those upon the stem diminish in their size upwards, are of the same shape, and sessile. Every small branch at the top of the stalk is terminated by a cluster of flowers, each standing upon a separate short peduncle. The most common colour of these flowers is blue; but there are some purple, others red, and some white. They appear in April, and if they have a shady situation continue in beauty great part of May. It grows upon mountains in most parts of North America.

Culture.—These plants are increased by seeds, and parting the roots.

The seeds should be sown in the spring, in a bed or border of common earth, raking them in. They soon come up, and in the latter end of the summer they should be put out, either where they

are to remain, or in nursery-beds, till October, when they should be planted out finally.

The roots should be parted in the autumn, as about August or September, but the sooner after they have done flowering the better. They should not be divided too small, and be planted directly; when they flower strong in the following spring. They afford ornament in shady situations.

PLATE XLIII.

1. PHILADELPHUS CORONARIUS.

COMMON PHILADELPHUS.

THIS genus contains plants of the hardy deciduous flowering shrubby kind.

It belongs to the class and order *Icosandria Monogynia*, and ranks in the natural order of *Hesperideæ*.

The characters are: that the calyx is a one-leafed perianthium, four or five-parted, acuminate, permanent: the corolla has four or five roundish petals, flat, large, spreading: the stamina have twenty or twenty-five awl-shaped filaments, the length of the calyx: anthers erect, four grooved: the pistillum is an inferior germ: style filiform, four or five parted: stigmas simple: the pericarpium is an ovate capsule, acuminate at both ends, naked at the top by the calyx being barked, four or five-celled: partitions contrary: the seeds numerous, oblong, small, decumbent, arilled, fastened to the thickened edge of the partitions: arils club-shaped, acuminate, toothleted at the base.

The species is *P. coronarius*, Common Syringa, or Mock Orange.

It is a shrub that sends up a great number of slender stalks from the root, seven or eight feet in height, having a gray bark, and putting forth several short branches from their sides: the leaves ovate or ovate-lanceolate; those upon the young shoots three inches and a half long, and two broad in the middle, terminating in acute points, and having several indentures on their edges; they are rough and of a deep green on their upper side, and pale on their under; stand opposite upon very short footstalks, and have the taste of fresh cucumbers: the flowers come out from the side, and at the end of the



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Engraved by F. Smith

1 *Philadelphus coronarius*
Common Philadelphus

2 *Passiflora caerulea*
Common Passion Flower

branches, in loose bunches, each on a short pedicel; they are white, and have a strong scent, which at some distance resembles that of orange-flowers; but near, it is too powerful for most persons: the flowers appear at the end of May, and continue a great part of June. It is a native, probably, of the South of Europe.

There are two varieties: the dwarf syringa, which seldom rises above three feet high: the leaves are shorter, more ovate, and little indented on their edges: the flowers come out singly from the side of the branches, and have a double or treble row of petals of the same size and form as the other, and the flowers have the same scent; but flowering very rarely, it is not so much in estimation.

The Carolina syringa, which rises with a shrubby stalk about sixteen feet high, sending out slender branches from the sides, opposite to each other: the leaves smooth, shaped like those of the pear-tree, entire, opposite, on pretty long footstalks: the flowers are produced at the ends of the branches; they are large, but without scent; each has four white oval petals spreading open, and a large calyx composed of four acute-pointed leaflets.

Culture.—These plants may be increased by suckers, layers, and cuttings.

The suckers are sent from the roots in great plenty; these should be taken from the old plants in autumn, and be planted in a nursery, to grow one or two years till they have obtained sufficient strength, when they may be removed to the places where they are to remain.

The layers may be laid down in the autumn, being made from the young twigs. These may be taken off in the following autumn, when well rooted, being planted out where they are to remain.

The cuttings of the young shoots may be planted in the autumn, in a shady situation, where they soon form plants.

The plants are extremely hardy, and thrive in almost any soil or situation, but grow taller in light good ground than in that which is stiff.

They are commonly disposed in plantations of flowering shrubs, among others of the same growth; mixing very well with lilacs,

guelder roses, and laburnums; and particularly valuable from their thriving under the shade of trees, and forming a blockade against low buildings, where persons have no objection to their strong smell.

2. PASSIFLORA CÆRULEA.

COMMON PASSION FLOWER.

THIS genus contains plants of the herbaceous and shrubby flowering kinds.

It belongs to the class and order *Gynandria Pentandria*, (*Pentandria Trigynia*,) (*Monadelphia Pentandria*,) and ranks in the natural order of *Cucurbitaceæ*.

The characters are: that the calyx is a five-parted perianthium, flat, coloured: the corolla has five petals, semilanceolate, flat, blunt, of the same size and form with the calyx: nectary a triple crown; the outer longer, encircling the style within the petals, more contracted above: the stamina have five awl-shaped filaments, fastened to a column at the base of the germ, and united at bottom, spreading: anthers incumbent, oblong, blunt: the pistillum is a roundish germ, placed on the apex of a straight, cylindrical column: styles three, thicker above, spreading: stigmas capitate: the pericarpium is a fleshy berry, subovate, one-celled, pedicelled: the seeds very many, ovate, arilled: receptacle of the seeds triple, growing longitudinally to the rind of the pericarp.

The species cultivated are: 1. *P. cærulea*, Common or Blue Passion-flower; 2. *P. incarnata*, Rose-coloured Passion-flower; 3. *P. lutea*, Yellow Passion-flower; 4. *P. serratifolia*, Notch-leaved Passion-flower; 5. *P. maliformis*, Apple-fruited Passion-flower; 6. *P. quadrangularis*, Square-stalked Passion-flower; 7. *P. alata*, Wing-stalked Passion-flower; 8. *P. laurifolia*, Laurel-leaved Passion-flower, or

Water Lemon; 9. *P. multiflora*, Many-flowered Passion-flower; 10. *P. rubra*, Red-fruited Passion-flower; 11. *P. Murucuja*, Moon-shaped-leaved Passion-flower; 12. *P. Vespertilio*, Bat-winged Passion-flower; 13. *P. rotundifolia*, Round-leaved Passion-flower; 14. *P. ciliata*, Ciliated Passion-flower; 15. *P. suberosa*, Cork-barked Passion-flower; 16. *P. holosericea*, Silky-leaved Passion-flower; 17. *P. glauca*, Glauous-leaved Passion-flower; 18. *P. minima*, Dwarf Passion-flower.

The first rises in a few years to a great height, with proper support: it may be trained up more than forty feet high: the stalks will grow almost as large as a man's arm, and are covered with a purplish bark, but do not become very woody: the shoots often grow to the length of twelve or fifteen feet in one summer, and being very slender, must be supported, otherwise they will hang to the ground, intermix with each other, and appear very unsightly: at each joint is one leaf composed of five smooth entire lobes; the middle one, which is longest, almost four inches long, and one inch broad in the middle; the others are gradually shorter, and the two outer lobes are frequently divided on their outer side into two smaller ones: their foot-stalks are near two inches long, and have two embracing stipules at their base; and from the same point issues a long clasper or tendril; the flowers come out at the same joint with the leaves, on peduncles almost three inches long; they are blue, have a faint scent, and continue only one day: the fruit is egg-shaped, the size and shape of the Mogul-plum, and when ripe of the same yellow colour. It grows naturally in Brazil.

There is a variety with much narrower lobes, divided almost to the bottom: the flowers come later in the summer: the petals are narrower, and of a purer white colour.

The second species has a perennial root: the stalks are annual, slender, rising four or five feet high: at each joint one leaf, on a short foot-stalk, having mostly three oblong lobes, but the two side ones are sometimes divided part of their length into two narrow segments, and thus becoming five-lobed; they are thin, of a light green, and slightly serrate: the flowers are produced from the joints of the

stalk, at the footstalks of the leaves, on long slender peduncles, in succession as the stalks advance in height during the summer months: they have an agreeable scent, but are of short duration, opening in the morning, and fading away in the evening: the fruit is as large as a middling apple, changing to a pale orange colour when ripe. It grows naturally in Virginia.

The third has a creeping root, sending up many weak stalks, three or four feet high: the leaves are shaped like those of ivy, and almost as large, but of a pale green and very thin consistence: the peduncle is slender, an inch and half long: the flowers dirty yellow, not larger than a sixpence when expanded. It is a native of Virginia and Jamaica, flowering in May and June.

The fourth species is perennial and shrubby: the stems are round; the younger ones very slightly villose, and climbing very high: the stipules are linear and acuminate: the footstalks of the leaves furnished with two pairs of glandules: the leaves ovate, smooth, and slightly serrated round their whole outline: the peduncles are one-flowered and solitary: the flowers have an extremely agreeable odour. It is a native of the West Indies, flowering from May to October.

The fifth has a thick stem, triangular, by slender tendrils thrown out at every joint rising to the height of fifteen or twenty feet: at each joint is one leaf, six inches long, and four broad in the middle, of a lively green and thin texture, having a strong midrib, whence arise several small nerves, diverging to the sides, and curving up towards the top: petioles pretty long, having two small glands in the middle: two large stipules encompass the petioles, peduncles and tendrils at the base: the peduncles are pretty long, having also two small glands in the middle: the cover of the flower is composed of three soft velvety leaves, of a pale red, with some stripes of a lively red colour; the petals are white, and the rays blue: the flowers being large make a fine appearance, but are of short duration; there is however a succession for some time: the fruit is roundish, the size of a large apple, yellow when ripe, having a thicker rind than any of the other sorts. It grows naturally in the West Indies.

In the sixth the stem is almost simple, thick, membranaceous at the four corners, somewhat hispid: the leaves are petioled, five or six inches long, entire, somewhat rugged, but without any pubescence: the tendrils very long, axillary: stipules in pairs, ovate at the base of the petioles, on which are six glands: the peduncles opposite to the petioles, thicker: the flowers very large, encompassed by a three-leaved involucre, the leaves of which are roundish, concave, entire, smooth, pale: the fruit is very large, oblong, and fleshy: the flower is much larger, though very like the above sort in colour. It is a native of Jamaica.

The seventh species is very like the preceding at first sight: the open flower has also a general resemblance; but the peduncle is cylindrical; the three divisions of the involucre small, lanceolate, with glandular serratures; the pedicel thickest at the insertion into the convex base of the flower: the five or six outer petals are oblong with an awn, the inner longer; the outer principal rays thinnest and shortest; imperfect rays in a double row, below and distinct from them a single row: no imperfect operculum; operculum partly horizontal and partly turning up to the column, then folding back down again and embracing the column, with which it is so connected that it appears inseparable, but is not joined to the column: nectary round the column, confined by the base: the column comes to the bottom of it. It is a native of the West Indies.

If this does not equal the first sort in elegance, it exceeds it in magnificence, in brilliancy of colour, and in fragrance, the flowers being highly odoriferous.

The eighth has a suffrutescent stem, with very divaricating, filiform branches: the leaves a little emarginate at the base, nerved, and very smooth, on short petioles compressed a little, having two glands under the base of the leaf: the tendrils are very long: the peduncles the length of the petioles: the three leaflets of the involucre are roundish, concave, with blunt glandular toothlets about the edge, and pale: the five leaflets of the calyx are broad-lanceolate, slightly membranaceous at the edge, horned with a point or awn, smooth, variegated on the inside with blood-red dots: petals five, the

length of the calyx, narrower, acuminate, with blood-red dots scattered over them: the flowers are very handsome and odoriferous, but the fruit ovate and watery. It flowers in June and July, and is a native of Jamaica.

The ninth species has slender stalks, sending out many small branches, and climbing to the height of twenty-five or thirty-feet: by age they become woody towards the bottom, and their joints are not far asunder: the leaves are on short slender petioles, three inches and a half long, and two broad in the middle, rounded at the base, but terminating in a point at top, smooth, entire, and of a lively green colour: the flowers are axillary, on long peduncles, having an agreeable odour, but seldom continuing twenty hours open. There is a succession of them from June to September, and the fruit will sometimes ripen in this climate. It grows naturally at La Vera Cruz.

The tenth has an herbaceous stem, twining round, grooved, hirsute, red: the lobes of the leaves entire, nerved, somewhat hispid, soft: the petioles round, red, villose, without glands: the tendrils subaxillary: the flowers alternate, nodding, on solitary one-flowered peduncles: the fruit spherical, marked with six lines, scarlet when ripe, hirsute. It is a native of the West Indies, flowering in April and May.

The eleventh species has an herbaceous, grooved, smooth stem: the leaves ovate or oblong, two-horned, with an intermediate bristle, three-nerved, veined, smooth, entire: dots on the back hollowed, pellucid: the petioles grooved, smooth, destitute of glands: the tendrils subaxillary, filiform, long: the flowers in pairs, axillary, scarlet, large: the berry ovate, the size of a pigeon's egg, and pedicelled. It is a native of the West Indies.

The twelfth has slender, striated, roundish stalks, less than a straw, of the same thickness from top to bottom, and of a brownish red colour, dividing into many slender branches: the leaves shaped like the wings of a bat when extended, about seven inches in length, or rather breadth, from the base to the top not more than two inches and a half, the upper ones smaller, the middle wider, and the lower narrower, smooth and somewhat shining: the colour in the upper

ones pale, in the middle deeper, in the lower darker green, with two purple tubercles or glands towards the base, where they are connected with the petiole; which is set half an inch from the base of the leaf, three nerves springing from it, two extending each way to the narrow points of the leaf, the other rising upright to the top, where is the greatest length of the leaf: the flowers are on short round peduncles from the axils of the middle and upper leaves, white and of a middle size, about three inches in diameter when expanded: they are without scent, open in the evening or during the night, in the month of July, and finally close about eight or nine o'clock in the morning. It is a native of the West Indies.

The thirteenth species has the stem suffrutescent at bottom, subdivided, angular, grooved: the leaves semiovate, three-nerved, veined, smooth on both sides, marked behind longitudinally with pellucid dots: lobes terminated by very small bristles; the middle one a little larger than the others: the petioles short, without glands: the tendrils filiform, very long: the stipules two, opposite, awl-shaped: the peduncles axillary, filiform, an inch long: the flowers nodding, pale green, rather large: the berry egg-shaped. It is distinguished from the other sorts by its rounded leaves slightly three-lobed at top only. It is a native of Jamaica.

The fourteenth runs to a great height, and has dark-green glossy leaves: the involucre is composed of three leaves divided into capillary segments, each terminating in a viscid globule: the pillar supporting the germen is bright purple with darker spots: the petals are greenish on the outside, and red within: the crown consists of four rows of radii, which are varied with white and purple. It is a native of Jamaica.

The fifteenth species rises with a weak stalk to the height of twenty feet: as the stalks grow old, they have a thick fungous bark like that of the Cork-tree, which cracks and splits: the smaller branches are covered with a smooth bark: the leaves are smooth, on very short petioles: the middle lobe is much longer than the lateral ones, so that the whole leaf is halbert-shaped: the flowers are

small, of a greenish yellow colour: the fruit egg-shaped, dark purple when ripe. It is perennial, and a native of the West Indies, flowering from June to September.

In the sixteenth species the stalks rise twenty feet high, dividing into many slender branches, covered with a soft hairy down: the leaves are shaped like the point of a halbert, three inches long, and an inch and half wide at the base, light green, soft and silky to the touch, standing obliquely to the foot-stalks: the flowers are not half so large as those of the common or blue Passion-flower; the fruit small, roundish, yellow when ripe, leaves ovate, tomentose on both sides: lateral lobes short; with an obsolete gland underneath behind the sinus of the lobe. It grows naturally at La Vera Cruz, flowering most part of the summer.

In the seventeenth, the whole plant is very smooth and even: the leaves glaucous underneath, undotted: the petioles furnished with two or four glands below the middle: the stipules acute, quite entire, more than half an inch in length: the flowers are sweet. It is a native of Cayenne.

The eighteenth species has the stem twining, simple, becoming corky at the base with age, round, smooth: the leaves subpeltate, subcordate: lateral lobes almost horizontal; all acute, nerved, smooth on both sides: the petioles short, round, reflex, smooth: the glands two, opposite, small, sessile, concave, brown, in the middle of the petioles: the stipules two, opposite, awl-shaped, by the side of the petioles: the tendrils long, between the petioles: peduncles axillary, solitary, longer than the petioles, loose, one-flowered: the flowers small, whitish: the berry small, blue, egg-shaped.

Culture.—In all the sorts it is either by seeds, layers, or cuttings, according to the kinds.

The first or hardy sort is capable of being raised either by seeds, layers, or cuttings: the seed should be sown in the early spring, as March, in large pots, half an inch deep, either plunging them in a warm border, and as the weather becomes warm moving them to the

shade; or in a hot-bed, which will forward the germination of the seed more fully, and the plants will rise sooner; which should afterwards be hardened gradually to the open air till the autumn, and then placed under a garden-frame for the winter; to have shelter from frosts, and in the spring planted out in pots, or some in the nursery; and in a year or two they may be transplanted where they are to remain, against some warm south wall.

The layers should be laid down from some of the branches in the common way in the spring, when they will readily emit roots, and make proper plants by autumn; when, or rather in spring following, they should be taken off and transplanted either into pots in nursery rows, or where they are to remain.

The cuttings should be made in February or March from the strong young shoots, in length from about eight to ten or twelve inches, planting them in any bed or border of common earth, giving frequent watering in dry weather, and when sunny and hot, if in a situation exposed to them, a moderate shade of mats will be of much advantage. They will emit roots at bottom, and shoots at top, and become good plants by autumn, allowing them the occasional shelter of mats, &c. during the winter's frost; and in the spring let them be planted out. If a quantity of these cuttings be planted close, and covered down with hand-glasses, it will forward their rooting; observing, however, when they begin to shoot at top, to remove the glasses, in order to admit fresh air.

The second and third, or green-house kinds, may be increased by seed, layers, and parting the roots: the seed, obtained from America, should be sown in pots in March or April, plunging them in a hot-bed to raise the plants, which afterwards inure to the open air in summer, giving them the shelter of a green-house or frame in winter: and in the spring following plant some out in pots, placing them among the green-house plants; and others may be planted in the full ground, under a warm fence, to take their chance.

The layers should be made in the summer from young shoots,

which will readily grow, and become good plants for potting off in autumn. The parting the roots should be done in spring, before they begin to shoot. The second sort multiplies exceedingly by its creeping roots; which should be divided into slips, and planted in a bed of rich earth till autumn, when some should be transplanted into pots for occasional shelter in winter.

All the other more tender stove kinds are capable of being increased by seeds, layers, and cuttings: The seeds are procured chiefly from abroad; and should be sown in spring in pots, plunging them in a hot-bed, or in a stove bark-bed: the plants soon appear, which, when three inches high, should be pricked out in separate small pots, giving water, and re-plunging them in the hot-bed, occasionally shading them till rooted: as they advance in growth, they should be shifted into larger pots, and be retained constantly in the stove.

The layers should be made from the young branches in the spring or beginning of summer, which will readily grow, and be fit to pot off separately in autumn.

The cuttings should be made in the spring or summer, from the young shoots, planting them in pots, plunging them in the bark, and giving water frequently; when most of them will take root, and be fit to pot off singly in autumn.

In respect to their general culture; as in severe winters, in the first sort, the branches, if not duly protected, are sometimes killed, it is advisable at such times, whilst the plants are young in particular, to give them the shelter of mats during the inclement season, and protect their roots with dry litter laid over the ground; carefully uncovering their branches as soon as the frost breaks: this covering, however, is only necessary in very severe frosts.

The green-house sorts should generally be potted, to move to shelter in winter, either of a green-house, or deep garden-frame: some plants of each sort may also be planted in the full ground, in a warm border, to take their chance; covering the ground over their roots in severe weather; and in the different orders of planting, plac-

ing stakes for the support of their climbing growth in the summer. And all the stove kinds must constantly be kept in pots, placed in the stove, and for the most part plunged in the bark-bed; placing strong stakes for the purpose of training the branches to, and managing them as other stove-plants of a similar growth.

The first sort is highly ornamental in the open ground when trained against southern walls, &c.; and those of the green-house, and stove kinds, among other plants in these collections.

PLATE XLIV.

1. PHILADELPHUS CORONARIUS.

SYRINGA, OR MOCK ORANGE.

THIS genus contains plants of the hardy deciduous flowering shrubby kind.

It belongs to the class and order *Icosandria Monogynia*, and ranks in the natural order of *Hesperideæ*.

The characters are: that the calyx is a one-leafed perianthium, four or five-parted, acuminate, permanent: the corolla has four or five roundish petals, flat, large, spreading: the stamina have twenty or twenty-five awl-shaped filaments, the length of the calyx: anthers erect, four-grooved: the pistillum is an inferior germ: style filiform, four or five-parted: stigmas simple: the pericarpium is an ovate capsule, acuminate at both ends, naked at the top by the calyx being barked, four or five-celled: partitions contrary: the seeds numerous, oblong, small, decumbent, arilled, fastened to the thickened edge of the partitions: arils club-shaped, acuminate, tooth-leted at the base.

The species is *P. coronarius*, Common Syringa or Mock Orange.

It is a shrub that sends up a great number of slender stalks from the root, seven or eight feet in height, having a gray bark, and putting forth several short branches from their sides: the leaves ovate or ovate-lanceolate; those upon the young shoots three inches and a half long, and two broad in the middle, terminating in acute points, and having several indentures on their edges; they are rough and of a deep green on their upper side, and pale on their under; stand opposite upon very short footstalks, and have the taste of fresh cucumbers: the flowers come out from the side, and at the end of the branches, in loose bunches, each on a short pedicel; they are



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Engraved by T. G. Smith

Philadelphus coronarius
1 *Syringa* or Mock Orange

Polemonium caeruleum
2 Blue Greek Valerian

white, and have a strong scent, which at some distance resembles that of orange-flowers; but near, it is too powerful for most persons: the flowers appear at the end of May, and continue a great part of June. It is a native, probably, of the South of Europe.

There are two varieties: the Dwarf Syringa, which seldom rises above three feet high: the leaves are shorter, more ovate, and little indented on their edges: the flowers come out singly from the side of the branches, and have a double or treble row of petals of the same size and form as the other, and the flowers have the same scent; but flowering very rarely, it is not so much in estimation.

The Carolina Syringa, which rises with a shrubby stalk about sixteen feet high, sending out slender branches from the sides, opposite to each other: the leaves smooth, shaped like those of the pear-tree, entire, opposite, on pretty long footstalks: the flowers are produced at the ends of the branches; they are large, but without scent; each has four white oval petals spreading open, and a large calyx composed of four acute-pointed leaflets.

Culture.—These plants may be increased by suckers, layers, and cuttings.

The suckers are sent from the roots in great plenty; these should be taken from the old plants in autumn, and be planted in a nursery, to grow one or two years till they have obtained sufficient strength, when they may be removed to the places where they are to remain.

The layers may be laid down in the autumn, being made from the young twigs. These may be taken off in the following autumn, when well rooted, being planted out where they are to remain.

The cuttings of the young shoots may be planted in the autumn, in a shady situation, where they soon form plants.

The plants are extremely hardy, and thrive in almost any soil or situation, but grow taller in light good ground than in that which is stiff.

They are commonly disposed in plantations of flowering shrubs, among others of the same growth; mixing very well with lilacs, guelder roses, and laburnums; and particularly valuable from their thriving under the shade of trees, and forming a blockade against low buildings, where persons have no objection to their strong smell.

2. POLEMONIUM CÆRULEUM.

BLUE GREEK VALERIAN.

THIS genus contains plants of the fibrous-rooted, herbaceous flowering perennial kind.

It belongs to the class and order *Pentandria Monogynia*, and ranks in the natural order of *Campanaceæ*.

The characters are: that the calyx is a one-leafed perianth, half-five-cleft, inferior, goblet-shaped, acute, permanent: the corolla one-petalled, wheel-shaped: tube shorter than the calyx, closed by five valves placed at the top: border five-parted, wide, flat; segments roundish, blunt: the stamina have five filaments, inserted into the valves of the tube, filiform, shorter than the corolla, inclining: anthers roundish, incumbent: the pistillum is an ovate, acute, superior germ: style filiform, the length of the corolla: stigma trifid, revolute: the pericarpium is a three-cornered capsule, ovate, three-celled, three-valved, opening three ways at top, covered: partitions contrary to the valves: the seeds very many, irregular, sharpish.

The species are: 1. *P. cæruleum*, Common Polemonium; 2. *P. reptans*, Creeping Polemonium, or Greek Valerian.

The first has a perennial, fibrous root: the herb smooth; the stems upright, rising to the height of eighteen or twenty inches, seldom more, leafy, paniced: the leaves alternate, unequally pinnate, many-paired; leaflets elliptic-lanceolate, quite entire: the corolla between bell-shaped and wheel-shaped, blue: the calyx bell-shaped, half-five-cleft: the filaments dilated at the base and membranaceous: capsule clothed with the calyx, ovate-globular, obsoletely three-grooved, thin, subpellucid: seeds six in each cell, in a double row, fastened to the inner angle of the cell, variously angular, eroded on the surface, of a dark rust colour. It is a native of Asia, flowering in May.

There are varieties with white flowers, with variegated flowers, and with variegated leaves.

The second species has creeping roots, by which it multiplies very fast. The leaves have seldom more than three or four pairs of leaflets, which stand at a much greater distance from each other than those of the common sort, and are of a darker green. The stalks rise nine or ten inches high, sending out branches their whole length. The flowers are produced in loose bunches, on pretty long peduncles; they are smaller than those of the common sort, and of a lighter blue colour. It is a native of America.

Culture.—These plants may be increased by seeds and parting the roots.

The seeds should be sown in the spring, upon a bed of light earth, and when the plants are pretty strong they should be pricked out into another bed of the same earth, four or five inches asunder, shading and watering them until they have taken new root; keeping them clear from weeds until the beginning of autumn, and then transplanting them into the borders of the pleasure-ground. The plants are not of long duration; but by taking them up in autumn and parting their roots they may be continued some years: but the seedling plants flower stronger than those from offsets.

The varieties can only be continued by parting the roots at the above season. They should have a fresh light soil, which is not too rich, as the roots will be apt to rot in winter, and the stripes on the leaves to go off.

The second sort may be increased by seeds or offsets in the same manner, and is equally hardy, but much less beautiful.

They afford ornament among flowery plants in the borders and other parts.

PLATE XLV.

1. PHLOX PANICULATA.

PANICLED LYCHNIDEA.

THIS genus comprises plants of the herbaceous, fibrous-rooted, flowery, perennial kind.

It belongs to the class and order *Pentandria Monogynia*, and ranks in the natural order of *Rotaceæ*.

The characters are: that the calyx is a one-leafed perianthium, cylindrical, ten-cornered, five-toothed, acute, permanent: the corolla one-petalled, salver-shaped: tube cylindrical, longer than the calyx, narrower below, curved in: border flat, five-parted: segments equal, blunt, shorter than the tube: the stamina have five filaments, within the tube of the corolla, two longer, one shorter: anthers in the throat of the corolla: the pistillum is a conical germ: style filiform, the length of the stamens: stigma trifid, acute: the pericarpium is an ovate capsule, three-cornered, three-celled, three-valved: the seeds solitary, ovate.

The species are: 1. *P. paniculata*, Panicked Lychnidea; 2. *P. suaveolens*, White-flowered Lychnidea; 3. *P. maculata*, Spotted-stalked Lychnidea; 4. *P. pilosa*, Hairy-leaved Lychnidea; 5. *P. Carolina*, Carolina Lychnidea; 6. *P. glaberrima*, Smooth Lychnidea; 7. *P. divaricata*, Early-flowering Lychnidea.

The first has the stalk smooth, of a light green, about two feet high, sending out a few side branches: the leaves are near three inches long, and one broad in the middle, of a dark green, and sessile: the flowers in a terminating corymb, composed of many smaller bunches, which have each a distinct footstalk, and support a great number of flowers, which stand on short slender pedicels:



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1 *Phlox paniculata*
Panicled Lychnidea

2 *Polygala chamaecrista*
Box leaved Milkwort

3 *Physalis alkekengi*
Winter Cherry

the calyx short, cut almost to the bottom into five narrow acute segments: the corolla is pale purple, appearing late in July, and often followed by seeds which ripen in autumn. It is a native of North America, flowering in August and September.

The second species has white flowers, moderately sweet-scented. It is a native of North America, flowering in July and August.

The third has upright stalks, of a purplish colour, closely covered with white spots, and about three feet high: the leaves about three inches long, and one broad at their base, ending in acute points. Towards the upper part of the stalks are small branches opposite, each terminated by a small bunch of flowers; but on the top of the principal stalk is a long loose spike of flowers, composed of small bunches from the axils at each joint; each cluster having one common peduncle near an inch long, but the pedicels are short. The flowers are of a bright purple colour, and appear late in July: if the season be temperate, or the soil moist, they continue in beauty a great part of August, but rarely perfect seeds in this climate. It is a native of North America, flowering in August.

The fourth species has the stalks about a foot high: the leaves narrow-lanceolate, ending in acute points, sessile, a little hairy: the calyx cut into acute segments almost to the bottom: the tube of the corolla slender and pretty long, cut at top into five ovate spreading segments: the flowers light purple, appearing at the end of June, but seldom producing seeds in this climate. It is a native of North America.

The fifth resembles the sixth, but the stem is three times as high, and somewhat rugged: the leaves wider, and ovate-lanceolate: the corymb consisting of numerous flowers, with several peduncles from the uppermost axils of the leaves, erect, and fastigate into a sort of corymb of a dark purple colour. It grows naturally in Carolina, flowering from July to September.

The sixth species has the stalks near a foot and half high, dividing into three or four small branches towards the top, each terminated by a corymb of flowers: the lower leaves opposite, three inches long, and near half an inch broad at the base, ending in long acute points,

smooth and sessile; the upper ones are alternate: the tube of the corolla twice the length of the calyx; segments of the border roundish, spreading, of a light purple colour: the flowers appear in June, but seldom produce seeds in this climate. It is a native of North America, flowering from June to August.

The seventh species has the stems almost upright, simple, and then divided into two branches: the leaves opposite on a simple stem, in five oppositions, softish, rugged; the upper ones alternate: the flowers from the partings of the stem and the axils of the alternate leaves, two together on separate pedicels: the calyx five-parted: the corollas pale blue, with a crooked tube: the flowers appear at the end of May, or beginning of June, but are rarely succeeded by seeds in this climate. It grows naturally in North America.

Culture.—These are generally increased by parting their roots, as they do not often produce seeds in this climate. The best time for performing this is in autumn, when the stalks begin to decay. The roots should not, however, be divided into too small heads, when they are expected to flower well the following summer; nor should they be parted oftener than every other year, as, when they are too often removed and parted, it greatly weakens the roots, so that they send out but few stalks, and those so weak as not to rise their usual height, and the bunches of flowers are much smaller.

The large root offsets may be planted out at once where they are to remain; but the small ones in nursery-rows, for further increase in size.

When the roots are parted and removed, it is a good way to lay some old tan, or mulch, upon the surface of the ground about their roots, to prevent the frost from penetrating; for, as they will have put out new roots before winter, the frost, when it is severe, often kills the fibres, whereby the plants suffer greatly, and are sometimes wholly destroyed.

The first and sixth sorts may be increased pretty expeditiously by their spreading roots, but the others but slowly this way; of course it is a better method to have recourse to cuttings. The best season for planting the cuttings is about the end of April, or the

beginning of the following month, when the young shoots from the roots, which are about two inches high, should be cut off close to the ground, and their tops shortened, being then planted on a border of light loamy earth, and shaded from the sun until they have taken root; or if they are planted pretty close together, and covered with bell or hand-glasses, or in pots, shading them every day from the sun, they will put out roots in five or six weeks; but on their beginning to shoot, the glasses should be gradually raised to admit the free air to them, otherwise they are apt to draw up weak, and soon spoil: as soon as they are well rooted, the glasses should be taken off, and the plants inured to the open air; being soon afterwards removed into a bed of good soil, planting them about six inches distance every way, shading them from the sun, and watering till they have taken new root; after which, when kept clean from weeds, they require no other care till autumn, when they should be removed into the borders or other parts, where they are designed to remain.

When some of the plants are put into pots, and sheltered under a hot-bed frame in winter, they flower stronger the following summer.

These plants succeed best in a moist rich mellow soil, growing taller, and flowering more strongly and in larger bunches. In poor dry soils they often die during the summer, when not constantly watered with care.

Some of the plants afford ornament in the borders, clumps, and other parts of pleasure-grounds; and those planted in pots to be placed in court-yards, or other places near the habitation, when they are in beauty, and being mixed with other flowers, are highly ornamental.

2. POLYGALA CHAMÆBUXUS.

BOX-LEAVED MILKWORT.

THIS genus contains plants of the woody, under shrubby, and herbaceous perennial kinds.

It belongs to the class and order *Diadelphia Octandria*, and ranks in the natural order of *Lomentaceæ*.

The characters are: that the calyx is a five-leaved, small perianth: leaflets ovate, acute: two below the corolla, one above that, and two in the middle, subovate, flat, very large, coloured, (the wings) permanent: the corolla subpapilionaceous: standard almost cylindrical, tubular, short, with a small reflex mouth, bifid: wings; keel concave, compressed, ventricose towards the tip: appendix of the keel, in most of the species two three-parted pencil-shaped bodies, fastened to the keel towards the tip: the stamina have diadelphous filaments (eight connected) enclosed within the keel: anthers eight, simple: the pistillum is an oblong germ: style simple, erect: stigma terminating, thickish, bifid: the pericarpium is an obcordate capsule, compressed with an acute margin, two-celled, two-valved: partition contrary to the valves; opening at each margin: the seeds solitary, ovate (with a glandular umbilicus).

The species cultivated are: 1. *P. myrtifolia*, Myrtle-leaved Milk-wort; 2. *P. Chamæbuxus*, Box-leaved Milk-wort.

The first has a shrubby stem, covered with a smooth brown bark, rising four or five feet high, and sending out several spreading branches towards the top: the leaves about an inch long and a quarter of an inch broad, lucid green, and sessile. The flowers are produced at the ends of the branches; they are large, white on the outside, but of a bright purple within: wings expanded wide, and standard incurved. It continues flowering most part of the summer:

each cell of the seed-vessel contains one hard smooth shining seed. It grows naturally at the Cape of Good Hope.

The second species rises with a slender, branching, woody stalk, about a foot high, when it grows upon good ground, but on a rocky soil it is seldom more than half that height. The branches are closely garnished with stiff smooth leaves, of a lucid green: from between the leaves, towards the top of the branches, the flowers come out upon very short peduncles; they are white on the outside, but within are of a purplish colour mixed with yellow, and have a grateful odour. According to Martyn, it is an elegant little ever-green shrub, of low growth, with leaves like those of Box, producing flowers from May to October, but most plentifully in May and June: each flower stands on a peduncle, proceeding from a kind of triphyllous cup, formed of floral leaves. It is a native of Austria, &c.

Culture.—The first sort may be increased by seeds, which should be sown in small pots, filled with light loamy earth; soon after they are ripe, placing them where they may have the morning sun only till October, when they should be placed under a hot-bed frame, and be plunged into old tanners' bark which has lost its heat, where they may be defended from frost during the winter, and in the spring the pots should be plunged into a moderate hot-bed, which will bring up the plants. When these appear, they should not be too tenderly treated, but have a large share of free air admitted to them; when they are fit to transplant, they should be carefully shaken out of the pots, and separated, planting each into a small pot filled with soft loamy earth, and plunged into a very moderate hot-bed, to forward their taking new root, shading them from the sun, and gently refreshing them with water as they may require. When they are rooted, they must be gradually inured to the open air, and in June they may be placed abroad in a sheltered situation, where they may remain till the middle or latter end of October, according as the season proves favourable; then they must be removed into the green-house; and treated in the same way as the Orange-tree, being careful not to give them too much wet during the winter season.

The second sort was formerly thought difficult to raise by seeds; but at present it is readily increased by parting its creeping roots, and planting them in bog earth, on a shady border, where it thrives very well, and spawns much.

The first affords variety when set out among other potted plants of the green-house kind; and the latter, in the borders, &c.

3. PHYSALIS ALKEKENGI.

WINTER CHERRY.

THIS genus comprises plants of the herbaceous and shrubby ornamental kind.

It belongs to the class and order *Pentandria Monogynia*, and ranks in the natural order of *Luridæ*.

The characters are: that the calyx is a one-leafed perianthium, ventricose, half-five-cleft, small, five-cornered, with acuminate segments, permanent: the corolla one-petalled, wheel-shaped: tube very short: border half-five-cleft, large, plaited: segments wide, acute: the stamina have five filaments, awl-shaped, very small, converging: anthers erect, converging: the pistillum is a roundish germ: style filiform, generally longer than the stamens: stigma blunt: the pericarpium is a subglobular berry, two-celled, small, within a very large, inflated, closed, five-cornered, coloured calyx: the receptacle kidney-form, doubled: the seeds very many, kidney-form, compressed.

The species are: 1. *P. angulata*, Tooth-leaved Winter Cherry; 2. *P. pubescens*, Woolly Winter Cherry; 3. *P. Alkekengi*, Common Winter Cherry; 4. *P. Pensylvanica*, Pennsylvanian Winter Cherry; 5. *P. viscosa*, Clammy Winter Cherry; 6. *P. somnifera*, Clustered Winter Cherry; 7. *P. flexuosa*, Fexuous Italian Winter Cherry; 8. *P.*

arborescens, Tree-like Physalis, or Winter Cherry; 9. *P. Curassavica*, Curassavian Winter Cherry.

The first has a straight stem, the thickness of the little finger, about a foot high, three-cornered below, four-cornered above, as are also the branches, which come out obliquely from top to bottom, in alternate order, and are thicker at the base: the lower leaves wider and rounder than those about the middle of the stem, and these larger than those of the branches, deeply toothed or jagged: the flowers five-cornered, of an extremely pale yellow colour, with spots of a darker yellow at the base. It is a native of both the Indies, &c.

There is a variety which is taller, with entire leaves, smaller flowers of a paler yellow colour.

The second species branches out very wide close to the ground, and the branches frequently lie upon it; they are angular and full of joints, dividing again into smaller branches: the leaves are on pretty long footstalks, about three inches long and almost two broad, having several acute indentures on their edges: the flowers produced on the side of the branches upon short, slender, nodding peduncles; they are of an herbaceous yellow colour with dark bottoms, and are succeeded by large, swelling bladders, of a light green, inclosing berries as large as common cherries, which are yellowish when ripe. It flowers in July, and is a native of Virginia.

These are both annual plants.

The third has perennial roots, creeping to a great distance: they shoot up many stalks in the spring a foot high or more: the leaves of various shapes, some angular and obtuse, others oblong and acute-pointed, of a dark green, on long footstalks: the flowers axillary, on slender peduncles, white, appearing in July; the berry round, the size of a small cherry, enclosed in the inflated calyx, which turns of a deep red in the autumn. It is a native of the South of Europe, &c.

The fourth species has many procumbent or erect stems, scarcely a foot in height, somewhat flexuose, roundish, or obscurely angular on the top, at the flowers branched; having an obscure down scattered over them: the leaves are alternate, ovate, blunt, serrate-

repand, almost naked above, obscurely tomentose underneath, next the flowers in pairs: the flowers axillary on very short peduncles, larger than those of the common sort, and of a pale yellow colour. They are succeeded by very small yellowish berries, which ripen in the autumn when the season proves warm. It is a native of North America, and flowers from July to September.

The fifth has a creeping root, sending up a great number of smooth stalks, about a foot high, dividing towards the top into small spreading branches: the leaves heart-shaped or ovate, about three inches long, and two broad near their base, entire, rough to the touch, of a pale yellowish green, alternate, on pretty long foot-stalks: the flowers are towards the top, axillary, on long slender peduncles, of a dirty yellow colour with purple bottoms. They appear in June and July, and are succeeded by viscous berries about the size of the common sort, of an herbaceous yellow colour, enclosed in a light green swelling bladder. It is a native of America.

The sixth species rises with a shrubby stalk, near three feet high, dividing into several branches which grow erect, and are covered with a woolly down: the leaves ovate-lanceolate, almost three inches long, and an inch and a half broad in the middle, downy, and on short petioles: the flowers small, of an herbaceous white colour, sitting very close to the branches, and succeeded by small berries nearly of the same size as the common winter cherry, and red when ripe. It is a native of Spain, Sicily, &c. flowering in July and August.

The seventh rises to the height of five or six feet, sending out long flexuose branches covered with a gray bark: the leaves oblong-ovate, often placed opposite, sometimes by threes round the branches, to which they sit close: the flowers in clusters at the base of the petioles, small, of an herbaceous yellow colour: they are succeeded by round purplish berries having ten cells, each including one seed. It flowers in July and August, but not unless the season is warm. It is a native of the East Indies.

The eighth species has a shrubby stalk, ten or twelve feet high, dividing towards the top into several small branches, covered with

a gray hairy bark: leaves on the lower part alternate, but towards the end of the branches opposite; the lower leaves from three to four inches long, and two broad in the middle, drawing to a point at both ends; they are of a pale green, and downy: the flowers from the axils towards the end of the branches, one or two at the same joint opposite, on short nodding peduncles; are small, of a pale dirty yellow colour, with purple bottoms: berries small, spherical, red, enclosed in an oval dark purple bladder. It flowers in June and July.

The ninth has a perennial creeping root: the stalks several, slender, about a foot high, becoming somewhat woody, but seldom lasting above two years; the leaves alternate, on short footstalks; they are about two inches long, and an inch and half broad: the flowers axillary towards the top, on short slender peduncles: petals small, sulphur-coloured, with dark purple bottoms: they appear in July and August, but are rarely succeeded by berries in this climate. It is a native of Curassao in the West Indies.

Culture.—These plants are all capable of being increased by seeds; the second, third, fourth, and fifth sorts, also by parting the roots; the sixth, seventh, eighth, and ninth, likewise by cuttings.

In the first sort, the seed should be sown in the early spring, as April, in pots of light earth, plunging them in a moderate hot-bed. When the plants have acquired a few inches in growth they should be removed into separate pots, gradually inuring them to the open air, in order that they may be removed with balls into the clumps or borders. But it is probably a better method to sow them in the latter end of May in the places where they are to remain, as they do not bear transplanting well.

They must be raised annually.

In the herbaceous kinds the seeds should be sown in the autumn as soon as they are ripe, or early in the spring, in the beds, borders, or clumps where they are to remain; or they may be transplanted into other beds, to remain till the following autumn, when they may be removed to the situations where they are to remain.

The roots may be parted either in the early autumn or spring

season, when the weather is mild. The divided parts should have root-fibres left at the bottoms and a bud in each at the tops, in order to their succeeding properly.

In the sixth and seventh sorts, the seeds should be sown in pots of light mould in the early spring and plunged in a mild hot-bed. When the plants have had a little growth they should be pricked out into separate small pots, proper shade and water being given; being afterwards managed as the shrubby exotics of less tender plants.

They may likewise be raised from cuttings made in the later spring or summer months, which should be placed in pots of light mould and plunged in the hot-bed, due shade and water being given till they have stricken root.

And the two last sorts may be raised from seeds or cuttings in the same way, by the aid of the bark hot-bed of the stove.

The first and the other herbaceous sorts are curious ornamental plants in the borders, clumps, and other parts of pleasure-grounds, and the four best shrubby sorts in the green-house and stove collections.



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Engraved by F. Sanfey

Rudbeckia purpurea.
1 Purple Rudbeckia.

Rosa lalea
2 Single yellow Rose.

PLATE XLVI.

1. RUDBECKIA PURPUREA.

PURPLE RUDBECKIA.

THIS genus contains plants of the herbaceous biennial and perennial kinds.

It belongs to the class and order *Syngenesia Polygamia Frustranea*, and ranks in the natural order of *Compositæ Oppositifoliæ*.

The characters are: that the calyx is common with a double row of scales; scales flat, widish, curtailed, six in each row: the corolla compound radiate: corollets hermaphrodite, numerous, in a conical disk; females about twelve, very long in the ray: proper of the hermaphrodite, tubular-funnel-form, with a five-toothed border: female ligulate, lanceolate, with two or three teeth, flat, pendulous: the stamina in the hermaphrodites: filaments five, capillary, very short: anther cylindrical, tubular: the pistillum in the hermaphrodites: germ four-corned: style filiform, the length of the corollet: stigma two-parted, revolute: in the females: germ very small: style none: stigma none: there is no pericarpium: calyx unchanged: the seeds in the hermaphrodites solitary, oblong, crowned with a membranaceous four-toothed rim: in the females none: the receptacle chaffy, conical, longer than the common calyx: chaffs the length of the seeds, erect, channelled-concave, deciduous.

The species cultivated are: 1. *R. laciniata*, Broad Jagged-leaved Rudbeckia; 2. *R. digitata*, Narrow Jagged-leaved Rudbeckia; 3. *R. hirta*, Hairy Rudbeckia; 4. *R. purpurea*, Purple Rudbeckia; 5. *R. angustifolia*, Narrow Simple-leaved Rudbeckia; 6. *R. triloba*, Three-lobed Rudbeckia.

The first is by some divided into two species, which are thus described: the root of the former is perennial, but the stalk is annual: the lower leaves are composed of five broad lobes, deeply cut into acute points, and some of them jagged almost to the midrib; the outer lobe is frequently cut into three deep segments: the stalks rise seven or eight feet high, and divide at top into several branches; are smooth, green, and have single, oval heart-shaped leaves, some indented on their edges, others entire: the peduncles naked, terminated by a single flower with yellow rays, like the sun-flower, but smaller: the latter is also perennial, and has smooth green stalks; but they rise higher: the leaves have all five lobes, which are much narrower, end with sharper points, and are very acutely indented on their sides: the flowers are smaller, and the petals narrower. They are both natives of North America, flowering here in July.

The second species has a perennial root like the former: the leaves at bottom are composed of seven or nine lobes, some entire, others jagged to the midrib; they are of a dark green and smooth: the stalks rise six feet high, and divide into many branches; they are of a purple or iron colour, and very smooth: the stem-leaves towards the bottom are hand-shaped, and composed of five lobes; higher up they have but three lobes, and at top the leaves are single: the flowers are smaller than those of the preceding, but of the same shape and colour. It is a native of North America, flowering in August and September.

In the third, the root continues four or five years: the leaves are oblong, ovate, and hairy: the stalks rise a foot and half high, and have one or two leaves near the bottom: the peduncle is naked near a foot in length, and is terminated by one pretty large yellow flower, shaped like the sun-flower: the florets of the ray are very stiff, and slightly indented at their points: the disk is very prominent, and of a dark purple colour. The flowers will continue six weeks, and there is a succession of them from the middle of July, till the frost puts a stop to them. It is a native of Virginia.

The fourth species is a perennial plant like the third. The leaves are longer and broader, are smooth, and have three veins: the pe-

duncles are taller, and have two or three narrow leaves on each, placed alternately: on the top is one flower, with long narrow, reflexed, peach-coloured florets in the ray: the disk is very prominent, and of a dark purple colour: it flowers at the same time with the third, but the flowers are of not so long duration. It is a native of Carolina and Virginia.

The fifth has the root perennial: the stalks four or five feet high: the leaves narrow, smooth, opposite: the florets in the ray of the flower yellow, long, twelve in number: disk dark red: the scales of the calyx spreading and almost awl-shaped. It is a native of Virginia, flowering in August and September.

The sixth species is biennial: the lower leaves are divided into three lobes, but those upon the stalks are undivided; they are hairy, and shaped like those of the first sort: the stalks branch out on their sides, and are better furnished with leaves than the others: the flowers are very like those of the first sort, but smaller. It grows naturally in several parts of North America.

Culture.—All the sorts of these plants may be increased by offsets, parting the roots and seeds.

The offsets in the perennial sorts should be taken off and planted out in the early autumn: when the stems decay the roots may also be divided and planted out at the same time, or in the early spring months.

As these plants are often liable to go off soon, some should be frequently raised to keep up the stock; and as others have a tendency to become biennial, and decay without increasing the root, they should have the flower-stems cut down in the early summer, to encourage the growth of the root offsets, for slipping in the following autumn.

All the sorts may be raised from seed, and the biennial sorts must always be raised annually in that way; likewise such of the perennial kind as are biennially inclined, sowing the seeds in April, in a border of light earth, raking them in; and when the plants are two or three inches high, pricking them out in nursery-rows till autumn,

then planting them out where they are to remain. They should have a light dry soil and rather warm situation.

They afford much ornament and variety in the borders and clumps, among other flowering plants.

2. ROSA LUTEA.

SINGLE YELLOW ROSE.

THIS genus contains plants of the deciduous flowering shrub and evergreen kind.

It belongs to the class and order *Icosandria Polygynia*, and ranks in the natural order of *Senticosæ*.

The characters are: that the calyx is a one-leaved perianth: tube ventricose, contracted at the neck; with the border spreading five-parted, globular: segments long, lanceolate-narrow (in some of them two alternate ones appendicled on both sides; two others, also alternate, naked on both sides; the fifth appendicled on one side only): the corolla has five petals, obcordate, the length of the calyx, inserted into the neck of the calyx: the stamina have very many filaments, capillary, very short, inserted into the neck of the calyx: anthers three-cornered: the pistillum has numerous germs, in the bottom of the calyx: styles as many, villose, very short, compressed close by the neck of the calyx, inserted into the side of the germ: stigmas blunt: there is no pericarpium: is a fleshy berry, turbinate, coloured, soft, one-celled, crowned with the rudé segments, contracted at the neck, formed from the tube of the calyx: the seeds numerous, oblong, hispid, fastened to the inner side of the calyx.

The species cultivated are: 1. *R. lutea*, Single Yellow Rose; 2. *R. sulphurea*, Double Yellow Rose; 3. *R. blanda*, Hudson's-Bay Rose; 4. *R. cinnamomea*, Cinnamon Rose; 5. *R. arvensis*, White Dog Rose; 6. *R. pimpinellifolia*, Small Burnet-leaved Rose; 7. *R. spinosa*.

sissima, Scotch Rose; 8. *R. parviflora*, Small-flowered American Rose; 9. *R. lucida*, Shining-leaved American Rose; 10. *R. Carolina*, Carolina Rose; 11. *R. villosa*, Apple Rose; 12. *R. provincialis*, Provence Rose; 13. *R. centifolia*, Hundred-leaved Rose; 14. *R. gallica*, Red Rose; 15. *R. damascena*, Damask Rose; 16. *R. sempervirens*, Evergreen Rose; 17. *R. pumila*, Dwarf Austrian Rose; 18. *R. turbinata*, Frankfort Rose; 19. *R. rubiginosa*, Sweet Briar Rose; 20. *R. muscosa*, Moss Provence Rose; 21. *R. moschata*, Musk Rose; 22. *R. alpina*, Alpine Rose; 23. *R. semperflorens*, Deep-red China Rose; 24. *R. alba*, White Rose.

The first has weak stalks, which send out many slender branches closely armed with short crooked brown prickles: the leaflets two or three pairs, ovate and thin, smooth, of a light green, sharply serrate: the flowers on short peduncles, single, bright yellow, without scent. It is a native of Germany, &c.

There is a variety termed the *Austrian Rose*, which has the stalks, branches and leaves like those of the Single Yellow Rose, but the leaves are rounder. The flowers are also larger: the petals have deep indentures at their points; are of a pale yellow on the outside, and of a reddish copper colour, orange-scarlet, or Barré colour within; are single, have no scent, or a disagreeable one, and soon fall away. It has sometimes flowers entirely yellow on one branch, and copper-coloured on another.

The second species differs from the preceding, not only in the doubleness of the flowers, but in having the leaflets simply serrate, not glandular, pubescent and glaucous underneath; whereas in that they are doubly serrate, glandular and glutinous, and of a shining green colour, the stipules lacerated; the fruits hemispherical and glandular, which in the other are subglobular and smooth: the prickles on the stem are of two sorts in this; a few being larger, and many smaller. It is a native of the Levant, flowering later than that, as in July.

The third has the stems, when full grown, unarmed; the younger ones, or those of the first year, are armed with slender straight prickles bent a little back at the top: branches round, unarmed, shin-

ing, reddish: the leaflets commonly seven, oblong, sharply and almost equally serrate, smooth: the petioles smooth, generally armed with one or two spinules. It is a native of Newfoundland and Hudson's Bay, flowering from May to August.

The fourth species rises about four feet high: the branches are covered with a purplish smooth bark, and have no spines, except at the joints immediately under the leaves, where they are commonly placed by pairs; they are short and crooked: the leaflets seven, ovate, serrate, hairy on their under side: the leaves of the calyx narrow and entire: the flower small, with a scent like cinnamon, whence its name. But, according to Parkinson, the shoots are somewhat red, yet not so red as the double kind, armed with great thorns, almost like the Eglantine bush; thereby showing, as well by the multiplicity of its shoots as the quickness and height of its shooting, its wild nature: the roses are single, somewhat large, and of a pale red colour. It is a native of the South of Europe.

There is a double variety, in which the shoots are redder; the flowers small, short, thick, and double, of a pale red colour at the end of the leaves (petals), somewhat redder and brighter towards the middle. It is the smallest and earliest of the double garden roses, flowering in May.

The fifth has round, glaucous, often mahogany-coloured stems; with very long, thong-like branches, bowing, with scattered, hooked prickles, smaller than in the common Dog-Rose: the leaflets five or seven, but mostly five, ovate, pointed, smooth, simply serrate, glaucous underneath: the petioles prickly: peduncles three or five in a terminating cyme, (rarely solitary) mahogany-coloured, covered with a glandular roughness, not all exactly from one point, accompanied by a few lanceolate bractes, and each bearing a single white flower, like the common Dog-Rose, but never red or blush-coloured, and less fragrant: fruit oblong; but in ripening it becomes globose, and deep red: the styles, as soon as they have passed through the neck of the calyx, are compacted into a cylinder, resembling a single style, terminated by a knob composed of the stigmas, which distinguishes it from the other species. It is a native of England, &c.

The sixth species has been confounded with what is commonly called the Scotch Rose; and some think it is not distinct from that. In the garden plant, according to Pallas, there are larger and setaceous prickles intermixed, and nine leaflets, the lower ones smaller. The flowers are white, and the segments of the calyx entire.

And the Siberian shrub is very elegant, a foot and half or at most two feet in height; the trunk thorny all over, the thickness of the little finger, very much branched, the branches collected into an ovate form: the spines on the trunk and branches very frequent, bristle-shaped, transverse or reclining, gray: the leaves very small, on red petioles, sometimes smooth, sometimes with small prickles on them: the stipules very narrow with wider earlets, external and serrate: the leaflets commonly seven, but sometimes nine or five, the size of the little finger nail, oval, cut round, sharply double-serrate, stiffish, rugged, more or less retuse, on some shrubs rather acute: the peduncles sometimes rough, sometimes smooth, with a ternate and simple leaf, almost to the flower: the fruit globose, smooth, and when ripe black, dry and insipid, being crowned with the segments of the calyx. It is a native of the South of Europe, as well as Asia, flowering here in May and June.

The seventh has its stems about two feet high, upright, much branched, with numerous straight, unequal, very slender needle-like prickles, on the young branches, which often disappear from the old ones: the leaflets seven or nine, small, roundish, blunt, serrate, smooth, sessile: their common petiole is sometimes prickly: the peduncles solitary, one-flowered, smooth, or very seldom prickly: the stipules small, halbert-shaped, toothed: the tube of the calyx almost hemispherical, smooth: the segments are entire: the petals white or cream-coloured, yellow at the base, delicately fragrant, sometimes striped with red: the fruit globose, deep red, black when quite ripe, smooth, but sometimes somewhat prickly. It is a native of most parts of Europe.

There are several varieties, as the Striped-flowered, or with variegated flowers, red striped with white.

The Red Scotch Rose, which seldom rises more than a foot high:

the stalks are covered with a brown bark, and are closely armed with small spines; the leaves are very small; the flowers are also small, sessile, and of a livid red colour: the fruit is round, of a deep purple colour inclining to black when ripe.

And, according to Withering, there is also a variety with prickly peduncles, and cream-coloured flowers, changing to white.

Lawrence likewise mentions a double Scotch Rose.

The eighth species very much resembles the two following sorts; but differs in having the stem two feet high, the petioles hairy at the top, and the flowers in pairs. It rises with several slender stems to the height of two or three feet, covered with a brownish green bark, and armed with a few sharp spines: the leaflets are seven or nine, oblong-ovate and sharply serrate: the leaves of the flower-cup have often linear leafy elongations: the corolla is single and of a pale reddish colour.

There is a variety with a double flower.

The ninth rises with several smooth stalks to the height of five or six feet: the young branches are covered with a smooth purple bark: the leaves are composed of four or five pairs of spear-shaped leaflets, smooth on both sides, of a lucid green on the upper surface, but pale on the under, and deeply serrate: the segments of the calyx long, narrow and entire: the flowers of a livid red colour, single, with little scent, appearing in July.

The tenth species has the stem five or six feet high, smooth: the stipular prickles two: the leaflets seven, oblong-ovate or nearly lanceolate, smooth, not shining, but opaque, serrate, paler underneath: the petioles prickly: the peduncles several, branched, forming a corymb, unarmed, with glandular hairs scattered over them: the leaflets of the calyx undivided, hispid on the outside: the petals obcordate, red. It is a sort that flowers late; and, like the two preceding, a native of North America.

The eleventh grows upright to the height of four feet or more: the branches are upright and short: the prickles on the stem and branches scattered, small, awl-shaped, nearly straight: the leaflets seven, elliptical, bluntish, clothed on both sides with short velvet-

like down, fragrant when rubbed, their serratures fringed with glands: the petioles downy, prickly, glandular: the peduncles terminating; mostly solitary, one-flowered, rough with rigid glandular bristles: the germ globular, bristly: the segments of the calyx long, downy, prickly on the outside: the corolla of a full rose-colour, not very odoriferous: the fruit globular, larger than in any other sort, and for the most part bristly and blood-red. It is found in Europe and Asia, and known as the cultivated sort in plantations, &c., both in a single and double state.

The fruit has a pleasant acid pulp surrounding the seeds, and is sometimes made into a conserve or sweetmeat, and served up at table in deserts, &c.

The twelfth species is well known in gardens, and one of the most beautiful sorts: the flowers are sometimes very large, and the petals closely folded over each other, like cabbages, whence it is called the Cabbage Rose: the flowers have the most fragrant odour of all the sorts.

According to Parkinson, the Great Double-Damask Provence, or Holland Rose, has its bark of a reddish or brown colour: the leaves likewise more reddish than in others, and somewhat larger. It usually grows very like the Damask Rose, and much to the same height: the flowers are of the same deep blush colour, or rather somewhat deeper, but much thicker, broader; and more double by three parts almost, the outer leaves turning back, when the flower hath stood long blown, the middle part itself being folded hard with small leaves: the scent comes nearest the Damask Rose, but is much short of it.

There are several varieties, as the Red Provence Rose: the stem and branches are not so great as those of the other, but greener, the bark not being so red: the flowers are not so large, thick and double, but of a little deeper damask or blush colour, turning to red, but not coming near the full colour of the best Red Rose: nor is the scent so sweet as that of the Damask Provence, but coming near that of the ordinary Red Rose. It is not so plentiful in bearing as the Damask Provence.

The Blush Provence Rose, in which the stalks rise from three to four feet high, and are unarmed: the leaves are hairy on their under side: the peduncles have some small spines: the segments of the calyx are semi-pinnate: the corolla has five or six rows of petals, which are large, and spread open; they are of a pale blush colour, and have a musky scent.

The White Provence Rose, which differs only in the colour of the flowers.

The Great and Small Dwarf Provence Roses, called Rose de Meaux, differ from each other in little except size: the smaller of the two is generally known by nursery-men and gardeners by the name of Pomponne Rose. It throws out numerous stems, which rarely exceed a foot or a foot and half in height; usually straight, rigid, and very prickly: the flowers very small, and distinguished by the brilliant colour of the central petals, appearing in June.

All the sorts flower from July to August.

The thirteenth rises with prickly stalks about three feet high: the leaves have three or five leaflets, which are large, oval, smooth, and of a dark green with purple edges: the peduncles are set with brown bristly hairs: the segments of the calyx are smooth and semipinnate: the flowers are very double, and of a deep red colour, but have little scent. It is a native of China.

The varieties are very numerous; as the Dutch Hundred-leaved Rose; the Blush Hundred-leaved Rose; the Singleton's Hundred-leaved Rose.

The Single and Double Velvet Rose, which, according to Parkinson, has the old stem covered with a dark-coloured bark, but the young shoots of a sad green, with few or no thorns: the leaves are of a sadder green than in most roses, and very often seven on a stalk: the flower is single; or double with two rows of petals, the outer larger, of a deep red like crimson velvet; or more double, with sixteen petals or more in a flower, most of them equal: they have all less scent than the ordinary Red Rose.

The Burgundy Rose, which is an elegant little plant, not more than a foot or eighteen inches in height.

The Sultan Rose ; the Stepney Rose ; the Gurnet Rose ; the Bishop Rose ; and the Lisbon Rose.

The fourteenth species has the stalks growing erect, and scarce any spines; they rise from three to four feet high: the leaves are composed of three or five large oval leaflets, which are hairy on their under side: the leaves of the calyx are undivided: the flowers are large, but not very double, spread open wide, and decay soon; they are of a deep red colour, and have an agreeable scent. " Parkinson gives the Red Rose the epithet of English, as this and the White are the most antient and known Roses to the country, and assumed by our precedent kings of all others, to be cognizances of their dignity, and because the Red is more frequent and used in England than in other places. The flowers, he says, vary in colour; some are of an orient red or deep crimson colour, and very double, although never so double as the White; some again are paler, tending somewhat to a damask; and some are of so pale a red, as that they are rather the colour of the Canker Rose; yet all for the most part with larger leaves than the damask, and with many more yellow threads (stamens) in the middle: the scent is much better than in the White, but not comparable to the excellency of the Damask Rose; yet this, being well dried and kept, will hold both colour and scent longer than the Damask."

There are several varieties: as the Red Officinal Rose; the Mundi Rose, which has the flowers very elegantly striped or variegated with red and white; in other circumstances it so perfectly resembles the Red Rose, that there can be no doubt of its being a variety of that; indeed it frequently happens that a Red Rose or two appears on the same plant with the variegated flowers.

The Childing Rose, the Marbled Rose, and the Double Virgin Rose, which have great affinity with each other, according to Miller.

The fifteenth rises with prickly stalks eight or ten feet high, covered with a greenish bark, and armed with short prickles: the leaves are composed of five or seven oval leaflets, dark green above, but pale underneath; the borders frequently turn brown and are slightly

serrate; the peduncles are set with prickly hairs; the calyxes are semipinnate and hairy; the corolla is of a soft pale red, and not very double, but has an agreeable odour; the hips are long and smooth. It is a native of the South of France, &c.

There are several varieties: as the Red Damask Rose, the Blush Damask Rose, which differ only in the shade of colour.

The York and Lancaster Rose, which agrees with the Damask in stalk, leaf, &c., differing only in the flower being variegated with white stripes. Mr. Hart's Rose has the white stripes more distinct: the flowers in these being less double than in several others, are frequently succeeded by fruit, and have ripe seeds, from which other varieties may be obtained. According to Parkinson, "sometimes one half of the petal is of a pale whitish colour, and the other half of a paler damask than common; or one petal is white or striped with white, and the other half blush or striped with blush; sometimes also striped or spotted over, and at other times little or no stripes or marks, and the longer it remains blown open in the sun, the paler and the fewer stripes, marks or spots will be seen in it. The smell is of a sweet Damask Rose scent."

The Red Monthly Rose, the White Monthly Rose, which are so called from their continuing to blow in succession during the greater part of the summer; not that they blow in every month, as the name implies. They are in every respect like the Damask Rose; unless it be that they are more full of prickles than that.

The Blush Belgic Rose, which rises about three feet high, with prickly stalks: the leaves are composed of five or seven leaflets, which are oval, hairy on their under side, and slightly serrate: the peduncles and calyxes are hairy, and without prickles; the calyxes are large and semipinnate; the flowers very double, of a pale flesh colour, with little scent, generally in great quantities.

The Red Belgic Rose, which differs only in having the colour of the flower a deep red.

The Great Royal Rose, and the Imperial Blush Damask Rose.

The sixteenth species has slender stalks which trail upon the ground unless they are supported, and if trained up to a pole or the

stem of a tree will rise twelve or fourteen feet high; they are armed with crooked reddish spines, and have small leaves, with seven oval acute leaflets, of a lucid green, and serrate: the leaves continue on all the year: the flowers are small, single, white, and have a musky odour. In their natural place of growth they continue in succession great part of the year, but their time of flowering in this climate is June. It is a native of Germany.

The seventeenth has the branches with a great abundance of prickles, which fall off on the stems: the fruits are large and pear-shaped. It is a native of Austria and Italy.

The eighteenth species has the young shoots covered with a pale purplish bark, set with a number of small prickles like hairs: the older branches have but few thorns: the fruit is very large: the flower is thick and double as a red-rose, but so strong swelling in the bud, that many of them break before they can be full blown; and then they are of a pale red-rose colour, between a red and a damask, with a very thick broad hard umbone of short yellow threads in the middle: the segments of the calyx are quite entire: the smell is nearest a red rose.

The nineteenth has yellow hooked prickles on the stem, which is five or six feet high: the leaflets seven, very fragrant, elliptic or subovate, above smooth and wrinkled, underneath rust-coloured with resinous atoms or little dots: serratures glandular: the petioles also glandular and prickly: the peduncles muricate and in corymbs: the calyx glandular: the petals rose-colour, white at the base: the fruit scarlet, muricate, but sometimes smooth, farinaceous, insipid.

The cultivated plant grows larger and more erect: the leaves are bigger and much sweeter than in the wild one, the rusty colour of them disappears, and the whole puts on a more vigorous appearance: the sweet scent is supposed to proceed from the gland. It is a native of most parts of Europe.

There are varieties with double flowers: as the Common Double Sweet Briar, the Mossy Double Sweet Briar, the Evergreen Double

Sweet Briar, the Marbled Doubled Sweet Briar, the Red Double Sweet Briar, the Royal Sweet Briar, and the Yellow Sweet Briar.

The twentieth species, which is mostly denominated the Moss Rose, from the moss-like pubescence on the calyx, has the stalks and branches closely armed with brown spines: the peduncles and calyx are covered with long hair-like moss: the flowers are of an elegant crimson colour, and have a most agreeable odour. It is known to us only in its double state, and the country to which we are indebted for it is not ascertained.

The twenty-first, or Musk Rose, rises with weak stalks to the height of ten or twelve feet, covered with a smooth greenish bark, and armed with short strong spines: the leaflets seven, light-green and serrate: the flowers in large bunches, in form of umbels, at the end of the branches, are white, and have a fine musky odour, appearing in July and August, and continuing in succession till the frost stops them. The stalks are too weak to support themselves. There is a variety with double flowers.

The editor of Miller's Dictionary considers the Evergreen Musk Rose of Miller to be the same with this.

The twenty-second species is a low shrub, with reddish-brown stems, the lower half or thereabouts of which is covered with straight awl-shaped slender white not pungent prickles; the upper part is quite naked: the stipules ciliate-glandular at the edge: the petioles hispid, and glandular: the leaflets commonly seven, smooth on both sides, ovate, biserrate, ciliate, glandular: the peduncles naked, unarmed: flowers solitary, red, middle-sized. It is a native of the Alps, &c. flowering in June and July.

The twenty-third has a height seldom exceeding three feet: the flowers large in proportion to the plant, semidouble, with great richness of colour (dark red) uniting a most delightful fragrance, coming out in succession during the greater part of the year, only more sparingly in the winter months: the segments of the calyx leafy at the end, one larger than the rest: the germs and peduncles sometimes, but rarely, smooth. It is a native of China.

The twenty-fourth species in its wild state has ovate leaves, smooth and deep green above, paler and slightly hairy underneath, unequally serrate and blunt: the stem and petioles villose, prickly: the peduncles solitary, long, hispid: fruits ovate, smooth, but more frequently having a few slender prickles on them: calyxes smooth, green, half-pinnate. It is a native of Europe, China, &c.

According to Parkinson, there are two varieties of the White Garden Rose; one attaining sometimes the height of eight or ten feet, with a stock of a great bigness, the other seldom higher than Damask Rose. Both have somewhat smaller and whiter-green leaves than in many other roses, five most usually on a stalk, and paler underneath; as also a whiter-green bark, armed with short prickles. The flowers in the one are whitish, with an eye of blush, especially towards the bottom, very double, and for the most part not opening so fully as the Red or Damask Rose. In the other more white, less double, and opening more. Some have only two or three rows of petals; and all have little or no smell.

Culture.—In all the sorts the increase may be effected by suckers, layers, or by budding upon stocks of other sorts of roses; but this last method is only practised for some peculiar sorts, which do not grow well upon their own stocks, and send forth suckers sparingly. Where more sorts than one are to be had upon the same plant, such sorts only should be budded upon the same stock as are nearly equal in their manner of growth, otherwise the strong one will draw all the nourishment from the weaker.

The suckers should be taken off in October, and planted out either in nursery-rows, or the places where they are to remain; as where they are permitted to stand upon the roots of the old plants more than one year, they grow woody, and do not form so good roots as if planted out the first year.

The best method to obtain good-rooted plants is to lay down the young branches in autumn, which will take good root by the autumn following; especially when watered in dry weather; when they may

be taken off from the old plants, and be planted out where they are to remain. The seeds are sometimes sown in the autumn, to produce new varieties, in beds of light mellow earth, or in drills, especially for the Common Sweet Briar kinds, and for raising hedges of them.

Almost all the sorts delight in a rich moist soil and an open situation, in which they produce a greater quantity of flowers, and those much fairer, than when they are upon a dry soil, or in a shady situation. The pruning which they afterwards require is only to cut out their dead wood, and take off all the suckers, which should be done every autumn; and if there are any very luxuriant branches, which draw the nourishment from the other parts of the plant, they should be taken out, or shortened, to cause them to produce more branches, if there be occasion for them to supply a vacancy; but it is best to avoid crowding them with branches, which is as injurious to these plants as to fruit-trees; for, if the branches have not equal benefit from the sun and air, they will not produce their flowers so strong, or in so great plenty, as when they are more open, and better exposed to the sun, so as to have a more free circulation of air. As the Moss Provence Rose seldom sends out suckers, and does not strike very freely by layers, it is often increased by budding it upon stocks of the other sorts; but the plants are best when raised from layers.

The best sort for flowering early and late is the Monthly, next to which in flowering in the open air is the Cinnamon, which is immediately followed by the Damask Rose, then the Blush, York, and Lancaster; after which, the Provence, Dutch Hundred-leaved, White, and most other sorts: and the latest sorts are the Virginia and Musk Roses, which, if planted in a shady situation, seldom flower until September; and, if the autumn proves mild, continue often till the middle of October. And the plants of the two sorts of Musk Roses should be placed against a wall, pale, or other building, that their branches may be supported, otherwise they are so slender and weak as to trail upon the ground. These plants should not be pruned until spring, because their branches are somewhat tender; so that

when they are cut in winter, they often die after the knife; these produce their flowers at the extremity of the same year's shoots in large bunches, so that their branches must not be shortened in the summer, lest the flowers should be cut off. The shrubs will grow to be ten or twelve feet high, and must not be checked in their growth, if intended to flower well. They are all highly ornamental plants, mostly for the shrubbery borders and clumps, being planted according to their habits of growth.

PLATE XLVII.

1. RHODODENDRON PONTICUM.

PONTIC RHODODENDRON.

THIS genus contains plants of the hardy, deciduous, and evergreen, flowering, shrubby kinds, Dwarf Rose-bay.

It belongs to the class and order *Decandria Monogynia*, and ranks in the natural order of *Bicornes*.

The characters are: that the calyx is a five-parted permanent perianth: the corolla one-petalled, wheel-funnel-form: border spreading, with rounded segments: the stamina have ten filiform filaments, almost the length of the corolla, declined. Anthers oval: the pistillum is a five-cornered retuse germ. Style filiform, the length of the corolla. Stigma obtuse: the pericarpium is an ovate capsule, subangular, five-celled, divisible into five parts: the seeds numerous, very small.

The species are: 1. *R. ferrugineum*, Rusty-leaved Rhododendron; 2. *R. hirsutum*, Hairy Rhododendron; 3. *R. chamæcistus*, Dwarf Rhododendron, or Rose-bay; 4. *R. ponticum*, Purple Rhododendron; 5. *R. maximum*, Broad-leaved Rhododendron.

The first rises with a shrubby stalk near three feet high, sending out many irregular branches, covered with a purplish bark. The leaves are lanceolate, an inch and half long, and half an inch broad in the middle, entire, with reflexed borders, lucid green on their upper surface, and rusty-coloured underneath, placed all round the branches without order. The flowers are produced in round bunches at the ends of the branches: the corolla is funnel-shaped with a short tube, and is cut into five obtuse segments at the brim, spreading a little open, and of a pale rose colour. It is a native of Switzerland, flowering from May to July.



Painted by Syd. Edwards

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Engraved by E. Sanfem.

Rhododendron ponticum
 1 Pontic Rhododendron

Robinia hispida
 2 Rose acacia

The second species seldom rises two feet high, and sends out many short woody branches, covered with a light brown bark. The leaves are ovate-lanceolate, about half an inch long, and a quarter of an inch broad, sitting pretty close to the branches; they are entire, and have a great number of fine ferruginous hairs on their edges and under side. The flowers are produced in bunches at the ends of the branches. The tube of the corolla is about half an inch long: the five segments of the brim are obtuse, spread half open, and are of a pale red colour. It is a native of the mountains of Switzerland.

The third is a small shrub, very much branched, the extreme branches leafy. The leaves are oblong, hard, on short reddish petioles. The peduncles one, or more, an inch long, villose, reddish brown, terminating. Calyx deeply five-cleft, of the same colour with the peduncle; the segments acute. The corolla purple, the segments ovate. The stamens longer than these. The style longer than the stamens. It is a native of Austria, &c.

The fourth species has an upright trunk, shrubby, commonly the height of a man, but sometimes only half so high, frequently thicker than the human arm, very much branched from the bottom irregularly; the wood white, the bark ash-coloured. The branches round, scattered, with a smoothish testaceous bark. The leaves alternately scattered, coriaceous, large, quite entire, very smooth, becoming ferruginous underneath, scarcely nerved except the midrib, having a longitudinal streak on the upper surface, of a wide-lanceolate form, more attenuated towards the thick petiole. The flowering-buds formed in autumn for the year following, and consisting of ferruginous, ovate-acute, concave, very smooth, imbricate scales. The flowers in a short raceme at the end of the branchlets, about ten, and very handsome. It is a native of the Levant, flowering in May and June.

The fifth species rises in its native soil, fifteen or sixteen feet high, with a shrubby stalk, sending out a few branches towards the top. The leaves stiff, smooth, six inches long and two broad, of a lucid green on their upper side, and pale on their under, whilst

young; but afterwards changing to the colour of rusty iron: they have short thick footstalks, and are placed without order round the branches: between these the buds are formed for the next year's flowers; these swell to a large size during the autumn and spring months till the beginning of June, when the flowers burst out from their covers, forming a roundish sessile bunch or corymb. It is a native of North America, flowering here from June to August.

Culture.—These plants may be increased by sowing the seeds, which are very small, as soon as possible after they are procured, either in a shady border, or in pots filled with fresh loam, having them very lightly covered with a little fine mould, and plunging the pots up to their rims in a shady border, and in hard frost covering them with bell or hand-glasses; taking them off in mild weather. When they are sown early in autumn, the plants come up the following spring, when they must be kept shaded from the sun, especially the first summer, and duly refreshed with water; in the autumn following removing them to a shady situation, on a loamy soil, covering the ground about the roots with moss, to guard them from frost in winter and keep the ground moist in the summer season.

They may also be increased from suckers or offsets, which they produce plentifully where they grow naturally, but seldom in this climate.

They are very ornamental in the border, clumps, and other parts of shrubberies.

2. ROBINIA HISPIDA.

ROSE ACACIA.

THIS genus comprises plants of the hardy deciduous tree and shrub sorts, with tender kinds for the stove.

It belongs to the class and order *Diadelphia Decandria*, and ranks in the natural order of *Papilionaceæ* or *Leguminosæ*.

The characters are: that the calyx is a one-leafed perianth, small, bell-shaped, four-cleft; the three lower toothlets more slender; the upper fourth toothlet wider, scarcely emarginate to the naked eye, all equal in length: the corolla papilionaceous: standard roundish, larger, spreading, blunt: wings oblong, ovate, free, with a very short blunt appendix; keel almost semiorbicular, compressed, blunt, the length of the wings: the stamina have diadelphous filaments, (simple and nine-cleft) ascending at top: anthers roundish: the pistillum is a cylindrical, oblong germ: style filiform, bent upwards: stigma villose in front at the top of the style: the pericarpium is a legume large, compressed, gibbous, long: the seeds few, kidney-form.

The species cultivated are: 1. *R. Pseud-Acacia*, False or Common Acacia; 2. *R. hispida*, Rose Acacia, or Robinia; 3. *R. Caragana*, Siberian Abrupt-leaved Robinia; 4. *R. frutescens*, Shrubby Robinia; 5. *R. pygmæa*, Dwarf Robinia; 6. *R. spinosa*, Thorny Robinia; 7. *R. violacea*, Ash-leaved Robinia; 8. *R. mitis*, Smooth Indian Robinia.

It grows very fast whilst young, so that in a few years from seed, the plants rise to eight or ten feet high, and it is not uncommon to see shoots of this tree six or eight feet long in one summer: the branches are armed with strong crooked thorns: the leaflets eight or ten pairs, ovate, bright green, entire, sessile: the flowers come out from the side of the branches in pretty long bunches, hanging down like those of Laburnum: each flower on a slender pedicel,

white, and smelling very sweet: they appear in June, and when the trees are full of flower, make a fine appearance and perfume the air round them; but they seldom continue more than a week. It is a native of North America, where it grows to a very large size, and the wood is much valued for its duration.

There is a variety which has no thorns on the branches, but which is easily known at first sight by its peculiar appearance.

And the Echinated, or Prickly-podded American False Acacia, in which the pods are much shorter, and closely beset with short prickles, but in other respects agrees with the common sort.

The second species rises in its native situation sometimes to the height of twenty feet, but in this climate seems to be of low growth; the branches spread out near the ground, and produce their flowers very young; the young branches, and also the peduncles and calyxes, are closely armed with small brown prickles, or rather stiff bristly hairs, like raspberries and some sorts of roses: the leaves are like those of the first sort, but the leaflets are larger and rounder: the flowers are larger and of a deep rose colour, but they have no scent: they come out early in June, and make a fine appearance; each flower is on a short separate pedicel: the legumes flat oblong. It is a native of Carolina.

The third has arboreous trunks, commonly branched from the bottom, slender, with a smooth, shining, coriaceous bark, covered by a greenish ash-coloured skin: branches alternate, very much divided; twigs rod-like, weak, very leafy, ash-coloured or greenish, with longitudinal nerves running from bud to bud: buds alternate, frequent, bearing both leaves and flowers, unarmed, with the stipules of the bud-leaves soft, but in the new branches spinescent, divaricating, rigid. It is a native of Siberia, flowering in April and May.

The fourth species has a branched trunk from the bottom, with a dusky or greenish-ash-coloured bark; there are commonly many lateral shoots or suckers from the root: the branches rod-like, pliant, loaded with leaves and flowers, of a shining yellowish colour, with longitudinal gray nerves, with triple spines: the leaves on the shoots of the year alternate, with spinescent stipules; from the buds in

bundles, with unarmed stipules: the leaflets clustered, obovate, attenuated at the base, with a spinule at the end: petiole spinescent, after the leaves are fallen, hardening with the stipules into a triple spine: the peduncles on the branches of the preceding year from each bud, one, two, or three, bent a little at the joint; one-flowered. It is a native of Siberia, by the Volga, &c.

The fifth has trunks covered with a shining yellowish bark: wood of a very deep bay, almost as hard as horn: the older twigs round, with a beautifully golden shining cuticle; branchlets gray, with very frequent two-spined buds: the spinules slender like needles, spreading, arising from the stipules, in the older branches deciduous: the leaflets four or six in the spontaneous shrub clustered in bundles, quite sessile, linear acuminate, a little hispid: the peduncles springing singly from most of the buds on the branchlets among the leaves, the length of the leaflets, bent at the joint. In this climate it is a low shrub, seldom rising more than three feet. The flowers are yellow, and appear in April. It is a native of Siberia.

The sixth species resembles the third sort, but is distinguished by its stiff or thorny stipules: it is a shrub above the height of a man: the leaflets six or eight, ovate, even: common petiole woody, the whole of it perennial, thorny at the end: the stipules awl-shaped, thorny, perennial: the trunk is scarcely an inch and half in diameter, with branches often a fathom in length, subdivided, twisted and diffused, so as to form a hemispherical head, full of branches and thorns. Being covered with flowers during the whole summer, it appears very beautiful: the wood bay-coloured within, on the outside yellow, and very hard: the cuticle on the younger branches greenish yellow, less shining, and more strigose than in the fifth sort, with ash-coloured longitudinal nerves, running from branch to branch: the branches are round, divaricating, alternate: the thorns spreading out every way almost at right angles, alternate, very large, arising from the permanent petioles enlarged, marked also with the scars of the leaflets, and having at the base on each side a small, bristle-shaped spinule, standing up, and arising from the stipules: there are several leaves and two or three flowers from the axils of all the

spines on the branches: the petioles are spinescent: the leaflets commonly two pairs, but sometimes three and even four, linear-lanceolate,*mucronate at the end with a spinule, opposite and remote: the peduncles are so short that the flowers seem to be sessile. It is a native of Siberia.

On account of the length and toughness of the branches, and its large stout thorns, it is admirably adapted to form impenetrable hedges, and is sufficiently hardy to bear our climate.

The seventh is an upright tree without thorns, growing to the height of twelve feet: the leaves alternate, numerous, shining; having three leaflets on each side, sometimes two, very seldom five; these are ovate, blunt, emarginate, entire, petioled, opposite, two inches long: the racemes axillary, half a foot in length; pedicels short, two-flowered, numerous: the flowers have the smell and colour of violets. It is a native of Carthagera.

The eighth species has a shrubby stem, three feet high, upright, branched: the leaflets ovate-lanceolate, smooth, bright green, two or three-paired: the racemes terminating, short: the corolla yellow: the legume oblong, narrowing to each end, smooth: the branches round, unarmed: the leaflets five, ovate, smooth, quite entire: the racemes have three flowers fixed at each tooth, each on its proper pedicel: the calyx subtruncate. It is a native of the East Indies, &c.

Culture.—The first six hardy sorts are all capable of being raised from seeds, cuttings, layers, and suckers; but the seed method is said to afford the best plants.

The seeds should be sown about the end of March or beginning of the following month, on a bed of light mould, being covered to the depth of half an inch. In the first sort and varieties the plants mostly appear in the course of six or eight weeks; but in the other kinds often not till the next spring. They should be well weeded and watered, and when sufficiently strong be set out in the spring or autumn in nursery-rows, for two or three years, in order to remain to have proper growth for final planting out.

The cuttings should be made from the young shoots, and planted out in the beginning of autumn, in a shady border where the soil is

mellow. They are mostly well rooted in the course of a twelve-month, when they may be removed into nursery-rows as above.

The layers should be made from the young wood, being laid down in the autumn, when in the course of the year they mostly become well rooted, and may be taken off and planted out in nursery-rows as the seedling plants.

The suckers, which are produced in plenty from the two first sorts, which may be removed in the early autumn or spring, and planted out in nursery-rows or in beds, to be afterwards removed into them.

The two last, or tender sorts, may likewise be raised from seeds and cuttings, but they must be sown and planted in pots, filled with good mould, to have the assistance of a hot-bed in the stove, by being plunged in it. When the plants have attained a little growth, they should be shaken out of the pots, and planted separately in small pots filled with the same sort of earth, plunging them in the tan-bed, affording due shade till well rooted, managing them afterwards as other tender stove plants.

The plants are most tender while young; they should therefore be kept in the stove tan-bed till they have acquired strength, when they may be preserved in the dry stove, with a temperate heat in winter, and be exposed in the open air in summer, in a warm sheltered situation when the weather is fine.

The hardy sorts have a fine effect in the border, clumps, and other parts of pleasure-grounds, and the tender kinds afford variety in the stove collections.

PLATE XLVIII.

I. SYMPHYTUM ORIENTALE.

EASTERN COMFREY.

THIS genus contains plants of the hardy herbaceous perennial kind.

It belongs to the class and order *Petandria Monogynia*, and ranks in the natural order of *Asperifoliæ*.

The characters are: that the calyx is a five-parted perianth, erect, five-cornered, acute, permanent: the corolla one-petalled, bell-shaped: tube very short: border tubular-bellying, a little thicker than the tube: mouth five-toothed, obtuse, reflexed: throat fenced by five lanceolate rays, spinulose at the edge, shorter than the border, converging into a cone: the stamina have five awl-shaped filaments, alternate with the rays of the throat; anthers acute, erect, covered: the pistillum is as four germs: style filiform, length of the corolla: stigma simple: there is no pericarpium: calyx larger, widened: seeds four, gibbous, acuminate, converging at the tips.

The species cultivated are: 1. *S. officinale*, Common Comfrey: 2. *S. tuberosum*, Tuberous-rooted Comfrey; 3. *S. orientale*, Oriental Comfrey.

The first has a perennial root, fleshy, externally black; the stem two or three feet high, upright, leafy, winged, branched at the top, clothed with short bristly hairs that point rather downward: the leaves waved, pointed, veiny, rough; the radical ones on footstalks, and broader than the rest; the clusters of flowers in pairs on a common stalk, with an odd flower between them, recurved, dense, hairy: the corolla yellowish-white, sometimes purple: the rays downy at each edge. It is a native of Europe and Siberia.



Painted by Syd. Edwards

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Engraved by F. Sanson

Symphytum orientale.
 1 Eastern Comfrey.

Salvia indica.
 2 Indian Sage.

There are varieties with white flowers, purple flowers, with blue flowers, and with red flowers.

The second species has the roots composed of many thick fleshy knots or tubers, which are joined by fleshy fibres: the stalks rise a foot and half high, and incline on one side: the leaves on the lower part are six inches long, and two inches and a half broad in the middle, ending in acute points, and not so rough and hairy as the first; they are alternate and sessile: the two upper leaves on every branch stand opposite, and just above them are loose bunches of pale yellow flowers, the corolla of which is stretched out further beyond the calyx than in the common sort. It is a native of Germany, &c. and flowers from May to October.

The third has a perennial root: the stalks two feet high: the leaves rounder, and armed with rough prickly hairs: the flowers in bunches like the first sort, but blue: they appear in March, but seldom produce seeds in this climate. Found near Constantinople.

Culture.—These plants may be increased by seeds or parting the roots, but the latter is more practised. The seed should be sown in the spring, in a border of common earth; in the autumn the plants will be proper to set out where they are to remain, or to remove into other pots. The roots should be parted in the autumn, and planted out either in beds about a foot from plant to plant, or where they are to remain; almost every part will grow, and the plants are hardy, and succeed in any soil or situation: they only require to be kept clean afterwards. They produce variety in mixture in the borders.

2. SALVIA INDICA.

INDIAN SAGE.

THIS genus contains plants of under-shrubby, herbaceous, and shrubby kinds.

It belongs to the class and order *Diandria Monogynia*, and ranks in the natural order of *Verticillatæ*.

The characters are: that the calyx is a one-leafed perianth, tubular, striated, gradually widening and compressed at the top: mouth erect, two-lipped; lower lip two-toothed: the corolla one-petalled, unequal: tube widening at the top, compressed: border ringent, upper lip concave, compressed, curved inwards, emarginate; lower lip wide, trifid, middle segment larger, roundish, emarginate: the stamina have two filaments, very short; two threads are fastened transversely to these almost in the middle, on the lower extremity of which is a gland, on the upper an anther: the pistillum is a four-cleft germ: style filiform, very long, in the same situation with the stamens: stigma bifid: there is no pericarpium. Calyx very slightly converging, having the seeds in the bottom of it: the seeds four, roundish.

The species cultivated are: 1. *S. officinalis*, Garden Sage; 2. *S. grandiflora*, Broad-leaved Garden Sage; 3. *S. triloba*, Three-lobed Sage, or Sage of Virtue; 4. *S. sclarea*, Common Clary; 5. *S. argentea*, Silvery-leaved Sage or Clary; 6. *S. verbenaca*, Vervain Sage or Clary; 7. *S. Indica*, Indian Sage or Clary; 8. *S. Horminum*, Red-topped Sage or Clary; 9. *S. glutinosa*, Yellow Sage or Clary; 10. *S. Mexicana*, Mexican Sage; 11. *S. Canariensis*, Canary Sage; 12. *S. Africana*, Blue-flowered African Sage; 13. *S. aurea*, Gold-flowered African Sage; 14. *S. pomifera*, Apple-bearing Sage; 15. *S. formosa*, Shining-leaved Sage.

The first is a branching shrub, about two feet in height: the younger branches are tomentose and whitish: the leaves are wrinkled, cinereous white or tinged with dusky purple, on very short petioles, sometimes eared at the base: the flowers terminating, in long spikes composed of six-flowered whorls, approximating, yet distinct. It is a native of the south of Europe and Barbary.

The varieties are: the Common Green Sage, the Wormwood Sage, the Green Sage with a variegated leaf, the Red Sage, the Red Sage with a variegated leaf, the Painted or Parti-coloured Sage with red leaves striped with white, or white, red, and green mixed, found, says Johnson, "in a country garden by Mr. John Tradescant, and by him imparted to other lovers of plants." There is also Spanish or Lavender-leaved Sage, in which the leaves are linear-lanceolate, very narrow and quite entire, in clusters on the side of the stalks; they are very hoary, and the branches are covered with a hoary down: the leaves on the upper part of the stalk are narrower than those of Rosemary; the flowers grow in closer spikes, and are of a light blue colour.

But the variety with red or blackish leaves is the most common in cultivation: and the Wormwood Sage is in greater plenty than the Common Green-leaved Sage.

In the second species the stalks do not grow so upright as those of the Common Sage; they are very hairy, and divide into several branches: the leaves are broad, woolly, on long petioles, serrate, and rough on the upper surface: the leaves on the flower-stalks are oblong-ovate, on shorter petioles, and very slightly serrate: the whorls are pretty far distant, and few flowers in each; they are of a pale blue, and about the same size with those of the common sort. It flowers in June, and in good seasons the seeds ripen in autumn. This sage is preferred to all the others for tea. It is often called Balsamic Sage.

The third has the leaves narrower than those of the common sort; they are hoary, and some of them are indented on their edges towards the base, which indentures have the appearance of ears. The spikes of flowers are longer than those of the two preceding sorts,

and the whorls are generally naked: the flowers are smaller, and of a deeper blue than those of the Common Sage. It is a native of the south of Europe.

The fourth species has the lower leaves large, in good ground seven or eight inches long, and four broad at the base, ending in blunt points: the stems large and clammy, about two feet high, with leaves of the same shape, but smaller, and sending out small opposite side branches: the flowers in loose terminating spikes, composed of whorls, of a pale blue colour. It is biennial, and a native of Syria, &c. flowering from July to September.

It is observed, that "a wine is made from the herb in flower, boiled with sugar, which has a flavour not unlike Frontiniae."

The fifth has the leaves of a thick consistence, having several irregular indentures on their borders: the stem near a foot and half high, sending out two or four branches near the bottom, which grow erect, the whorls of flowers large, towards the top barren. It is a native of the island of Candia, and biennial, flowering in June.

The sixth has a perennial brown root, the thickness of the middle finger, striking deep into the earth, and furnished with numerous fibres: the stems nearly upright, two feet high, set with horizontal somewhat viscid hairs, purplish, especially at the joints: the root-leaves on long petioles, varying in form, oblong, rounded at the end, sometimes a little pointed, not unfrequently heart-shaped at the base, but more commonly the leaf runs down on each side the foot-stalk, and to a greater length on one side than on the other, very slightly hirsute, on the margin irregularly waved and serrate or toothed, paler beneath, veiny and marked with small glandular concave dots: stem-leaves somewhat remote, the lowermost on short footstalks, the uppermost sessile: the flowers in whorls, almost naked, containing about six flowers. It is a native of all the four continents, flowering during the whole summer from June, and even in October.

The seventh has the lower leaves heart-shaped, acutely crenate, of a thick consistence, seven or eight inches long, and four broad at the base, where they are eared: the stem four feet high, having two

or three pairs of smaller leaves on the lower part of the joints: the upper part, for the length of two feet, has whorls of flowers, at two or three inches distance from each other, without any leaves under them: the calyx is hairy and blunt: the helmet of the corolla arched, erect and blue, terminating in a blue point; the two side segments of the under lip are of a violet colour; the middle segment, which is indented at the point, is white, and curiously spotted with violet on the inside; the two side lobes turn yellow before the flower drops. It is a native of India, flowering from May to July.

The eighth has the stems erect, about a foot and half high: the leaves shaped like those of the common Red Sage, gradually diminishing in size to the top: the stems have whorls of small flowers, and are terminated by clusters of small leaves, and forming two varieties; one with purple and another with red tops. For the sake of this coma they are preserved in gardens for ornament. They flower in June and July, and their seeds ripen in the autumn. It is a native of the south of Europe.

The ninth has an abiding root, composed of strong woody fibres: the leaves four inches long, and three broad at the base, of a pale yellowish green colour, upon footstalks three or four inches long: the stems strong, near four feet high, having smaller leaves below, and the upper part closely set with whorls of large yellow flowers. The whole plant is very clammy, and has a strong scent, somewhat like common Garden Clary. The flowers are used in Holland to give a flavour to the Rhenish wines. It is a native of Germany, &c. flowering from June to November.

The tenth has the stem shrubby, eight or ten feet high, sending out slender four-cornered branches of a purplish colour: the leaves thin, pale green, and hairy on their under side, on long slender footstalks: the flowers in close thick spikes at the end of the branches, having a fine blue colour. It is a native of Mexico, flowering from May to July.

The eleventh has the stem shrubby, five or six feet high, dividing into many branches covered with a flocky down: the leaves three inches and a half long, and an inch and half broad at the base,

where are two acute angular ears: petioles long and woolly: the top of the stalk branches out into many footstalks, forming a sort of panicle: the flowers are of a light blue colour, and are ranged in whorled spikes, having two small leaves under each whorl. It is a native of the Canary Islands, flowering from June to September.

The twelfth rises with a shrubby stalk four or five feet high, dividing into branches: the leaves are ovate, of a gray colour: the flowers come out in whorls towards the end of the branches; they are of a fine blue colour, larger than those of the common Sage, appear in succession most of the summer months, and those which come early are often followed by seeds ripening in autumn. It is a native of the Cape.

The thirteenth also rises with a shrubby stalk seven or eight feet high, covered with a light-coloured bark, sending out branches the whole length, which grow almost horizontally: the leaves are of a gray colour: the flowers, in thick short spikes at the end of the branches, are very large, and of a dark gold colour. It is a native of the Cape, flowering from May to November.

The fourteenth has the stem shrubby, four or five feet high, dividing into several branches: the flowers of a pale blue colour: the branches have often punctures made in them by insects, producing protuberances as big as apples, in the same manner as galls upon the Oak, and the rough balls upon the Briar. It is remarked by Martyn, that the common Sage has the same excrescences in the island of Candia or Crete, and that they carry them to market there under the name of Sage Apples. It was found at Candia.

The fifteenth has the stem suffruticose, the height of a man, upright, brachiate, somewhat knotty, loosely chapped, ash-coloured: the branches and branchlets opposite, spreading, four-cornered, naked at the base, rufous: shoots four-grooved, green at the top, clammy: the leaves spreading, acute (in the garden bluntish), crenate-serrate, somewhat wrinkled, veined, with the midrib and veins prominent only beneath, subcoriaceous, greenish, but paler on the back: petiole scarcely half as long as the leaf, round on one side, grooved on the other: flowers very many, from the axils of the

shoots, in a sort of whorl, in the garden commonly five together, the two lower of which are later: they are on short, spreading, one-flowered peduncles, jointed at the top. It is a native of Peru, flowering most part of the summer.

Culture.—These plants are in most of the sorts raised without much difficulty.

Culture in the Sage Kind.—This in all the varieties may be effected by slips or cuttings of the young shoots from the sides of the branches, sometimes also by bottom rooted offsets, and likewise by seed. Slips both of the former and same year's growth may be used.

Those of the first sort may be employed in April, but the latter not till May, or later; these, however, most readily strike root, and assume a free growth.

In either case moist weather should be chosen; and having recourse to some good bushy plants, a proper quantity of the outward robust side shoots, about five, six, or seven inches long, should be slipped off, trimming off all the lower leaves, then planted out in some shady border, with a dibble, in rows half a foot asunder, putting them down almost to their tops, giving water directly, to settle the earth close, as well as to promote an early emission of root-fibres, and repeating the waterings occasionally in dry weather: the slips in general soon emit fibres, and shoot freely at top; when they have a tendency to spindle up with slender shoots, or run up to flower, it is proper to top them short, in order to force out laterals below, to assume a bushy growth: they mostly form tolerably bushy plants by the autumn, when, or in the spring following, they may be removed, with balls of earth about their roots, and planted where they are to remain, either in four feet beds, or in continued rows, a foot and half asunder, if designed as a close plantation for use: those designed for the pleasure-ground should be disposed in the borders, &c. so as to afford variety.

Where there are rooted offsets, they may be slipped off separately with the fibres to them, either as the plants stand in the ground, or the bunches of plants taken up and divided into as many separate

slips as are furnished with roots, being planted out at once where they are to remain.

The plants raised from young slips generally form the strongest and most bushy plants.

In raising these plants from seed, which is but seldom practised, it should be sown in April, in a bed of light rich earth, raking it in: the plants soon come up; and when about two or three inches high, should be pricked out, the strongest in nursery rows, half a foot asunder, to gain strength till the autumn or spring following, and then planted out with balls where they are to stand.

In the after-culture of this species and varieties, all that is requisite is the keeping them clean from weeds in summer, cutting down the decayed flower-stalks in autumn, and slightly digging between the rows in the same season, to keep them clean and decent during the winter, &c. But where this digging is not done in the autumn it should not be omitted in the spring.

The leaves of the Sage should be gathered with care and attention, not to cut the tops too close, to render the plants naked and stubby, especially when late in autumn and winter; in which they would be more liable to suffer from severe frost than when the head is preserved somewhat full and regular: besides, in this state the plants continue longer in a prosperous free growth.

When, in any old plantation, naked, stubby, or decayed parts occur, they should be cut out, and any straggling irregular growths reduced to order by occasional pruning in spring or summer, by which the plants will more readily emit fresh shoots and form full heads.

Fresh plantations of Sage should be formed as the old ones decline.

In continuing them where the ground is much impoverished, a little dry rotten dung should be pointed in lightly, to give more vigour to the plants.

Culture in the Clary Kind.—These in the herbaceous kinds are easily raised from seed, and in the perennial sorts by parting the roots.

The seed should be sown in March, in any bed or border of common earth, raking it in; and when the plants have got leaves of two or three inches growth, they should be planted out in showery weather, in rows eighteen inches distant, and at the same distance in the lines: they soon strike root, and grow large, furnishing large leaves, fit for use in autumn, winter, and the following spring.

The perennial sorts are raised from seed in the same manner, setting the young plants out in the summer in nursery-rows till autumn, when they should be planted out into the borders, &c.

The annual sorts may be sown in spring in the borders, in patches, to remain.

The roots in the perennial kinds may be parted in autumn, or early in the spring, and planted out where they are to remain.

Culture in the tender Shrubby Kinds.—These are easily increased by cuttings of the young shoots; they should be planted in pots in the spring, and plunged in a hot-bed, where they soon emit roots at bottom and shoots at top, and should be gradually hardened to the full air: but cuttings planted in summer will often strike without the aid of a hot-bed when planted either in pots or in a bed of natural earth, under frames and lights, or covered close with hand-glasses, and shaded from the mid-day sun, being occasionally watered.

The young plants should afterwards be potted off separately, and managed as other shrubby exotics of the green-house.

The last sort requires a warm dry green-house in winter, and to be very sparingly watered.

Some of the sorts are useful as culinary plants, others for the purpose of ornament in the borders, &c. and the tender sorts in green-house collections.

PLATE XLIX.

1. SANGUINARIA CANADENSIS.

CANADA PUCCOON.

THIS genus contains a plant of the low herbaceous flowering kind.

It belongs to the class and order *Polyandria Monogynia*, and ranks in the natural order of *Rhoeadeæ*.

The characters are: that the calyx is a two-leaved perianth, ovate, concave, shorter than the corolla, caducous: the corolla has eight petals, oblong, blunt, spreading very much, alternately interior and narrower: the stamina have very many filaments, simple, shorter than the corolla: anthers simple: the pistillum is an oblong compressed germ: style none: stigma thickish, two-grooved with a streak, height of the stamens, permanent: the pericarpium is an oblong capsule, ventricose, sharp at both ends, two-valved: the seeds very many, round, acuminate

The species is *S. Canadensis*, Canadian Sanguinaria, Bloodwort, or Puccoon.

It has a tuberous, thick, fleshy root, placed transversely, with several slender fibres descending from it, of a reddish saffron colour, and yielding a juice of the same hue, which is bitter and acrid, and flows also from the leaves and footstalks when cut. In the spring the root puts forth slender round smooth stems, palish green or brownish tinged with purple, each terminated by a little conical head, which expands into a white flower of eight petals, at first concave, then flat, and finally rolled back so as to be convex, marked with slender streaks: filaments white, with saffron-coloured anthers. When the flowers are about expanding, a single leaf comes out upon



Painted by J. A. Edwards. London Published May 1826 by G. Kearsley Fleet Street. Engraved by E. V. G. M.
 1 *Sanguinaria Canadensis*. 2 *Saxifraga crassifolia*.
 Canada Puccoon. Oval-leaved Saxifrage.

each flower-stalk, at first small, compressed, and protecting the flower with its foot-stalk; but afterwards becoming larger, and unfolding into lobes, like those of the fig, which are thickish, smooth, internally of a deep glaucous green, externally of a whitish glaucous colour with frequent veins, most conspicuous on the outside; on petioles which are flat and slightly grooved on the inside, and convex on the outside. Three or four flower-stems arise from each root, and are surrounded at the base by oblong, membranaceous, tender, striated scales: the root, leaves, and flowers have no smell. It is a native of America, and flowers here in the beginning April.

There are varieties with single flowers, with semi-double flowers, and full flowers.

Culture.—This plant is readily increased by parting the roots, and planting them out in the borders or other places where they are to remain, in the autumnal season, when the leaves and stems decay.

They should have a loose soil, with a mixture of bog earth and rotten leaves, and sheltered situation, not too much exposed to the sun: the roots should not be parted oftener than every two years.

They afford variety in the borders, clumps, and other parts among other low-growing bulbous-rooted plants.

2. SAXIFRAGA CRASSIFOLIA.

OVAL-LEAVED SAXIFRAGE.

THIS genus contains plants of the low hardy herbaceous perennial kind.

It belongs to the class and order *Decandria Digynia*, and ranks in the natural order of *Succulentæ*.

The characters are: that the calyx is a one-leafed perianth, five-parted, short, acute, permanent: the corolla has five petals, spread-

ing, narrow at the base: the stamina have ten awl-shaped filaments: anthers roundish: the pistillum is a roundish acuminate germ, ending in two short styles: stigmas blunt: the pericarpium is a subovate two-beaked capsule, two-celled, opening between the points: the seeds numerous, minute.

The species mostly cultivated are: 1. *S. Cotyledon*, Pyramidal Saxifrage; 2. *S. granulata*, White Saxifrage; 3. *S. crassifolia*, Thick-leaved Saxifrage; 4. *S. umbrosa*, London Pride; 5. *S. hypnoides*, Mossy Saxifrage, or Ladies' Cushion; 6. *S. sarmentosa*, China Saxifrage; 7. *S. rotundifolia*, Round-leaved Saxifrage.

There are other species that may be cultivated.

The first has the panicle very much branched, many-flowered, or branched a little with few flowers: the petals unspotted or spotted; and according to Miller, who has made three species of it, the roots are perennial and fibrous, and the leaves are gathered into circular heads, embracing each other at the base like the common House-leek, in some of the sorts tongue-shaped, about two inches long, and a quarter of an inch broad: the stem about a foot high, purplish, a little hairy, and sending out several horizontal branches the whole length: the flowers are in small clusters at the end of the branches; white with several red spots on the inside. But in others the leaves are smaller. It is a native of the Alps.

It is observed, that when these plants are strong they produce very large pyramids of flowers, which make a fine appearance; and being kept in the shade, and screened from wind and rain, continue in beauty a considerable time: they flower in June. There are several varieties.

The second species has the root composed of several little grains or knobs, attached to one main fibre, and throwing out small fibres from their base: the stem is erect, round, pubescent, leafy, somewhat viscid, branched and panicked at top, of a brown or reddish hue, with which colour the leaves, &c. are also tinged, giving the whole herb a rich glowing appearance; these parts are also clothed with the same kind of hairs, especially the calyx, which is very clammy to the touch: the leaves are somewhat fleshy, lobed, and

cut; those next the root on long footstalks; those on the stem alternate, subsessile. It is a native of Europe, flowering in May.

It varies with double flowers, in which state it is cultivated as an ornamental plant.

The third has the root superficial, black, scaly, with the relics of dead leaves, the thickness of a finger or thumb, round, sending down filiform fibres from the lower surface: the stems from the axils of the leaves of the year preceding at the tops of the roots alternate, very short, almost upright, covered with the sheaths of the leaves, quite simple, but branched in autumn: the leaves three or four, alternate, spreading very much, obovate-oblong, crenulate, subretuse, very smooth, veined, a span long, flat, coriaceous: the petioles shorter by half than the leaves, roundish, channelled, smooth, with a wide membrane at the base, of an ovate form, embracing, and in the winter season serving for a gem: the scape or peduncle terminating, solitary, erect, a span high, the thickness of the little finger, roundish, very smooth, purplish, almost naked, many-flowered: the panicle contracted, naked, blood-red, composed of pedate racemes: the flowers inferior, drooping, pedicelled: the pedicels short, round, rugged.

It is observed, that "the stem changes every year into root; that which flowers one year losing its leaves during the winter, turning to the ground, becoming black, and putting forth fibres:" and after the plant has flowered, the stem puts forth branches from the axils of the leaves, which have the panicle of flowers for the next year included in their gems.

According to Curtis, the leaves are large, red on the under, and of a fine shining green on their upper surface, and may be ranked among the more handsome kinds of foliage: the flowering stems, according to the richness and moisture of the soil in which they are planted, rise from one to two or even three feet high; at top supporting a large bunch of purple pendulous flowers, expanding in April and May, and, if the season prove favourable, making a fine appearance. It is a native of Siberia.

It is remarked, that "there is another Saxifrage in gardens, exceedingly like this in appearance, but differing, in producing larger

bunches of flowers, and in having larger, rounder, and more heart-shaped leaves."

The fourth species has the leaves all radical, aggregate in tufts, spreading, running down into the petiole, even and quite smooth, often purple beneath: the scape a span high, erect, red, hairy, many-flowered, with a few small alternate bractes: the flowers upright: the calyx finally reflexed: the petals obovate-lanceolate, white or flesh-coloured, most beautifully dotted with yellow and dark red: the germ altogether superior, rose-coloured: the capsule ventricose, tipped with purple. It is a native of Ireland and England, flowering in June and July. It has the names of None-so-pretty, and London Pride.

The fifth has long slender fibrous roots, throwing many procumbent leafy shoots, which grow matted together, forming thick tufts: from the common origin of these arises a solitary erect round stem, bearing two or three straggling linear undivided leaves, and terminating in an upright panicle of a few large white flowers: the leaves are alternate, linear, acute, pale green, smooth, their edges only often hairy with soft white woolly threads: the leaves on the shoots simple and undivided; those at the bottom of the stem all deeply three-cleft, with the segments divaricate. According to Withering, the stem, fruitstalks, and calyx are thickly set with short hairs terminated by red globules, and the rest of the plant thinly set with fine white hairs. It is a native of Britain, flowering in May, and often again sparingly in July and August.

The sixth species has the root-leaves petioled, cordate-suborbicular, hairy, crenate, with blunt lobules, oleraceous, having white veins on the upper surface, beneath liver-coloured: the petioles roundish, longer than the leaf: the stem herbaceous, round, a foot and half high, almost leafless, pubescent, as the whole herb is, with hairs standing out; the whole raceme compound, the partial racemes drooping at the end before they flower. Branched runners proceed in abundance from the axils of the root-leaves, terminating in rooting off-sets: three of the petals are smaller, whitish stained with red; two larger, white. It is observed, that "its round variegated leaves,

and strawberry-like runners, with the uncommon magnitude of the two lower pendent petals, joined to the very conspicuous glandular nectary, in the center of the flower, half surrounding the germ, render it strikingly distinct." It is a native of China and Japan, flowering in June and July.

The seventh has the lower leaves almost round, on long footstalks, deeply divided, hairy and green above, pale beneath: the stems erect, about a foot high, channelled and hairy, with kidney-shaped leaves: the stem puts out a few slender footstalks from the upper part, which, together with the stem itself, are terminated by small clusters of flowers, white spotted with red. It is a beautiful plant, and a native of Switzerland, &c.

Culture.—The first sort may be readily increased by planting off-sets taken from the sides of the old plants in small pots filled with fresh light earth, placing them in the shade during the summer, but letting them be exposed to the influence of the sun in winter: all the off-sets should be taken off, as by that means they will flower much stronger: the young plants afford flowers the second year.

The second sort may likewise be increased in the same way, which should be planted out where they are to remain in July, when the stems decay, in fresh undunged earth, giving them a shady situation till winter: they should be set out in large tufts, and when in the open ground have a shady place assigned them.

The third sort may be increased with little trouble by parting the roots, and planting them out in the spring or autumn in the open ground, or in pots in the former situation, being protected in severe weather, and in the latter removed to the green-house or a garden frame.

The fourth may also be raised by off-sets in the same way, a shady situation being chosen.

The fifth sort is easily increased by planting its trailing rooted branches in the autumn where they are to remain: it should have a moist soil and shaded situation.

The sixth may be readily raised by the runners, which may be

planted in pots to be placed in the green-house, though it will bear the open air in mild winters in a warm sheltered situation.

The last may be increased by parting the roots and planting them out in the early autumn: it should have a moist shady situation, with a rather stiff loamy soil.

They all afford ornament and variety in the clumps, borders, and other parts of pleasure-grounds; except the sixth, which must have a place in the green-house collection.



Painted by Syd Edwards

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Engraved by F. Savien

1 *Syringa vulgaris*
Lilac

2 *Sarracena flava*
Yellow Sarracena

PLATE L.

1. SYRINGA VULGARIS.

LILAC.

THIS genus contains plants of the deciduous flowering shrubby kind.

It belongs to the class and order *Diandria Monogynia*, and ranks in the natural order of *Sepiaria*.

The characters are: that the calyx is a one-leafed perianth, tubular, small: mouth four-toothed, erect, permanent: the corolla one-petalled, funnel-form: tube cylindric, very long: border four-parted, spreading and rolled back: segments linear, obtuse: the stamina have two filaments, very short: anthers small, within the tube of the corolla: the pistillum is an oblong germ: style filiform, length of the stamens: stigma bifid, thickish: the pericarpium is an oblong capsule, compressed, acuminate, two-celled, two-valved: valves contrary to the partition: the seeds solitary, oblong, compressed, acuminate at both ends, with a membranaceous edge.

The species cultivated are: 1. *S. vulgaris*, Common Lilac: 2. *S. Persica*, Persian Lilac.

The first is a shrub, which grows to the height of eighteen or twenty feet in good ground, and divides into many branches; those of the White sort grow more erect than the Blue; and the Purple or Scotch Lilac has its branches yet more diffused. The branches of the White are covered with a smooth bark of a gray colour; in the other two it is darker; the leaves of the White are of a brighter green; they are heart-shaped in all, almost five inches long, and three inches and a half broad near the base, placed opposite, on foot-

stalks an inch and half in length. The buds of the future shoots, which are very turgid before the leaves fall, are of a very bright green in the White sort, but those of the other two are dark green. The flowers are always produced at the ends of the shoots of the former year; and below the flowers other shoots come out to succeed them; as that part upon which the flowers stand decays down to the shoots below every winter. There are generally two bunches or panicles of flowers joined at the end of each shoot; those of the Blue are the smallest, the flowers also are smaller, and placed thinner than either of the others; the bunches on the White are larger, but those of the Scotch are larger still, and the flowers fairer; it of course makes the best appearance: the panicles of flowers grow erect, and, being intermixed with the bright green leaves, have a fine effect, which with the fragrancy of the flowers, renders it one of the most beautiful shrubs of the garden: the flowers appear early in May, or towards the end of April, and when the season is cool continue three weeks; but in hot seasons soon fade. It is supposed a native of Persia.

There are several varieties: as with white flowers, with blue flowers, with purple flowers, or Scotch Lilac.

The second species is a shrub of much lower growth than the common sort, seldom rising more than five or six feet high: the stems are covered with a smooth brown bark: the branches are slender, pliable, extend wide on every side, and frequently bend down where they are not supported: the leaves two inches and a half long, and three fourths of an inch broad, of a deep green colour: the flowers in large panicles at the end of the former year's shoots, as in the former; of a pale blue colour, and having a very agreeable odour. They appear at the end of May, soon after those of the common sort, and continue longer in beauty, but do not perfect their seeds in this climate.

There are several varieties: as the common purple-flowered, white-flowered, blue-flowered, and the lacinated or cut-leaved.

Culture.—These plants are mostly raised by suckers or layers, and

sometimes by seeds. The suckers should be taken off in the autumn or spring, with root-fibres to them, and be planted out either in nursery-rows, to remain a year or two, or where they are to remain. The layers may be made from the young pliant shoots, and be laid down in the autumn, in the usual way, when in the autumn following they may be taken off and planted out, as in the suckers. The first sort may likewise be raised from seeds sown in a bed of common earth, in the autumn or spring, keeping the plants clean when they come up. They afford variety in the large borders and other parts of shrubberies.

2. SARRACENA FLAVA.

YELLOW SARRACENA.

THIS genus contains plants of the herbaceous perennial kind.

It belongs to the class and order *Polyandria Monogynia*, and ranks in the natural order of *Succulentæ*.

The characters are: that the calyx is a double perianth; lower three-leaved: leaflets ovate, very small, deciduous; upper five-leaved; leaflets subovate, very large, coloured, deciduous: the corolla has five ovate petals, bent in, covering the stamens: claws ovate-oblong, straight: the stamina have numerous small filaments: anthers simple: the pistillum is a roundish germ: style cylindrical, very short: stigma clypeate, peltate, five-cornered, covering the stamens, permanent: the pericarpium is a roundish five-celled capsule: the seeds numerous, roundish, acuminate, small.

The species are: 1. *S. flava*, Yellow Side-saddle Flower; 2. *S. purpurea*, Purple Side-saddle Flower.

The first has the leaves near three feet high, small at the bottom, but widening gradually to the top; they are hollow, and arched over

at the mouth like a friar's cowl: the flowers grow on naked pedicels, rising from the root to the height of three feet, and are of a green colour. It is a native of Carolina, Virginia, &c. flowering in June and July.

The second species has a strong fibrous root, which strikes deep into the soft earth, from which arise five, six, or seven leaves, in proportion to the strength of the plant; these are about five or six inches long, hollow like a pitcher, narrow at their base, but swell out large at the top; their outer sides are rounded, but on their inner side they are a little compressed, and have a broad leafy border running longitudinally the whole length of the tube; and to the rounded part of the leaf there is on the top a large appendage or ear standing erect, of a brownish colour; this surrounds the outside of the leaves about two thirds of the top, it is eared at both ends, and waved round the border: from the centre of the root, between the leaves, arises a strong, round, naked footstalk, about a foot high, sustaining one nodding flower at the top: the leaflets of the upper calyx are obtuse, and bent over the corolla, so as to cover the inside of it; they are of a purple colour on the outside, but green within, only having purple edges: the petals are of a purple colour, and hollowed like a spoon. It is a native of most parts of North America, in boggy situations.

Culture.—As these plants grow naturally in soft boggy situations, they are raised with difficulty here. The best mode is to procure them from the places of their natural growth, and to have them taken up with large balls of earth to their roots, and planted in tubs of earth; they should be constantly watered during their passage, otherwise they decay before they arrive: as there is little probability of raising these plants from seeds, so as to produce flowers in many years, if the seeds should even grow, young plants should be taken up for this purpose, as they are more likely to stand than those which have flowered two or three times. When the plants are brought over, they should be planted into pretty large pots, which should be filled with soft spongy earth, mixed with rotten

wood, moss, and turf, which is very like the natural soil in which they grow. These pots should be put into tubs or large pans which will hold water, with which they must be constantly supplied, and placed in a shady situation in summer; but in winter be covered with moss, or sheltered under a frame, otherwise they will not live in this climate; having free air admitted in mild open weather.

PLATE LI.

1. SCABIOSA ATROPURPUREA.

SWEET SCABIOUS.

THIS genus contains plants of the herbaceous, annual, biennial, perennial, and shrubby kinds.

It belongs to the class and order *Tetrandria Monogynia*, and ranks in the natural order of *Aggregatæ*.

The characters are: that the calyx is a common perianth, many-flowered, spreading, many-leaved: leaflets in various rows surrounding the receptacle, and placed upon it, the inner ones gradually less: proper perianth double, both superior; outer shorter, membranaceous, plaited, permanent; inner five-parted, with the segments subulate-capillaceous: the corolla universal equal, often from unequal ones: proper one-petalled, tubular, four or five-cleft, equal or unequal: the stamina have four filaments, subulate-capillary, weak: anthers oblong, incumbent: the pistillum is an inferior germ, involved in its proper sheath as in a calycle: style filiform, length of the corolla: stigma obtuse, obliquely emarginate: there is no pericarpium: the seeds solitary, ovate-oblong, involute, crowned variously with proper calyxes: the receptacles common convex, chaffy, or naked.

The species mostly cultivated are: 1. *S. alpina*, Alpine Scabious; 2. *S. leucantha*, Snowy Scabious; 3. *S. succisa*, Devil's-bit Scabious; 4. *S. integrifolia*, Red-flowered Annual Scabious; 5. *S. tatarica*, Giant Scabious; 6. *S. gramuntia*, Cut-leaved Scabious; 7. *S. stellata*, Starry Scabious; 8. *S. atropurpurea*, Sweet Scabious; 9. *S. argentea*, Silvery Scabious; 10. *S. graminifolia*, Grass-leaved Scabious; 11. *S. Africana*, African Scabious; 12. *S. Cretica*, Cretan Scabious.



Painted by Syd Edwards

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Engraved by F. Sanford

Scabiosa atropurpurea
Sweet Scabious

Scilla campanulata
Bell-flowered Squill

The first has a perennial root, composed of many strong fibres which run deep in the ground: the stems several, strong, channelled, upwards of four feet high: the leaflets four or five pairs, unequal in size and irregularly placed, ending in acute points: the flowers are on naked peduncles, at the ends of the branches, of a whitish yellow colour, appearing at the end of June. It is a native of the Alps of Switzerland, &c.

The second species has a perennial root: the lower leaves almost entire, serrate: stem stiff, two feet high, bifid at top, spreading; in the division arises a naked peduncle, which, as also the divisions, are each terminated by a single flower, composed of many white florets. It is a native of the south of France, &c.

The third has also a perennial, oblong, blackish root, near the thickness of the little finger, often growing obliquely, stumped at the lower end so as to appear as if bitten off, whence its trivial name, and furnished with long whitish fibres: the stem from a foot to eighteen inches in height, upright, branched at top, round, rough with hair, and often of a reddish colour: the branches are lengthened out, and each bears one flower: the root-leaves are ovate, quite entire, blunter than the others; the stem-leaves lanceolate, the lower ones remotely toothed, but the upper ones entire; all dark-green, rather coriaceous, harsh and hairy: the flowers in nearly globular heads. It is a native of Europe, flowering from August to the end of October.

The fourth species has an annual root: the stem is not hispid: the branches patulous: the root-leaves like those of the Daisy, ovate, bluntish, rugged, more acutely serrate; stem-leaves few; branch-leaves lanceolate, embracing, ciliate at the base, seldom toothed or pinnatifid, very long. It is a native of Germany, flowering from June to August.

The fifth rises with a strong branching stalk four or five feet high, closely armed with stiff prickly hairs; lower hairs spear-shaped, about seven inches long, and near four broad in the middle, deeply cut on the sides; the stem-leaves more entire, some of them sharply

serrate; those at the top linear and entire: the flowers from the sides and at the top of the stalks, white, and each sitting in a bristly calyx: the root is biennial. It is a native of Tartary, &c.

The sixth species has the root-leaves villose, ash-coloured, deeply pinnatifid; with the pinnules blunt, distinct, the lower ones linear and entire, the upper gradually wider, blunt, gash-toothed: the stem-leaves bipinnate, with the leaflets linear, narrow, unequal, scarcely pubescent: the stem a foot and half in height: it flowers very late, even in November, and is perennial. It is a native of the south of France, &c.

The seventh is annual, the stems three feet high, hairy: the leaves oblong, deeply notched; the upper ones cut almost to the midrib into fine segments: the flowers on long peduncles: the receptacles are globular: the florets large, spreading open like a star, of a pale purple colour. It is a native of Spain and Barbary, flowering in July and August.

It varies with different jagged leaves, and with red and white flowers.

The eighth species has a fibrous annual biennial root, crowned with a large tuft of oblong leaves, variously jagged and cut on the edges: the stems upright, numerously branched on every side, three feet high or more: the calyx is twelve-leaved, recurved, linear, the length of the corolla: the flower very dark purple, with white anthers: the fruit ovate: the receptacle subulate, with bristle-shaped chaffs. It flowers from June to October: the flowers are very sweet, and there is a great variety in their colour, some being of a purple approaching to black, others of a pale purple, some red and others variegated. It also varies in the leaves, some being finer cut than others: and sometimes from the side of the calyx come out many slender peduncles sustaining small flowers, like the (proliferous or) Hen-and-chicken Daisy.

The ninth is a low perennial plant, with a branching stalk spreading wide on every side; the leaves are of a silvery colour; the flowers are small, pale, and have no scent: the stem has white

hairs thinly scattered over it: the root-leaves are somewhat toothed: stem-leaves undivided, and ciliate towards the base. It is a native of the Levant, flowering from June to October.

The tenth species has a perennial root, from which arise three or four stalks, the lower parts of which have linear leaves about four inches long, and the eighth of an inch broad, of a silvery colour, ending in acute points: the upper part of the stalk is naked for six or seven inches in length, and sustains at the top one pale-blue flower. It is a native of the mountains of Dauphiné flowering in July.

The eleventh has a weak shrubby stalk, which divides into several branches, and rises about five feet high: the leaves are ovate-lanceolate, three inches long, and an inch and half broad, deeply crenate, of a light green, and a little hairy: the peduncle terminating, sustaining one pale flesh-coloured flower. It is a native of Africa, flowering from July to October: it varies in the leaves. The variety with the leaves finely cut, has, according to Miller, the stalks hairy, and dividing into several branches: the bottom leaves are lanceolate crenate and entire; but those on the upper part of the stalk are bipinnate: the flowers are produced on long naked footstalks from the end of the branches; are of a pale flesh-colour and large, but no scent.

The twelfth rises with a shrubby stalk three feet high, and divides into several woody knotty branches: the leaves are narrow, silvery, entire, four inches long, and a quarter of an inch broad: the flowers stand upon very long naked peduncles at the end of the branches, and are of a fine blue colour. It is a native of Candia and Sicily. According to Miller, the plant from Candia has shorter and much broader leaves, and not so white as those of the Sicilian; the flowers are not so large, and are of a pale purple colour.

Culture.—All the annual and biennial sorts may be increased by seed, which should be sown in a bed or border of common mould, or in pots to be forwarded in the hot-bed in the early spring months; but the biennial sort is better sown in the latter end of the summer, as about August, as they flower stronger and more fully

the following summer. Some may however be sown at both seasons.

When the plants have attained some growth, in the spring-sown sort, they should be pricked out in the places where they are to grow, on beds, to be afterwards removed: and in the autumn-sown sorts into nursery-rows, six or eight inches apart, to be removed into the places where they are to remain, with balls about their roots, in the following spring, being duly watered and kept free from weeds.

The starry sort is best sown in patches in the borders or clumps where the plants are to flower.

The herbaceous perennial kinds may be readily increased by sowing the seeds in a bed or border of good light earth, in the spring season, the plants being planted out when they have attained a little growth where they are to grow: they are also capable of being raised by parting the roots and planting them out where they are to grow in the autumn.

The shrubby kinds may be readily raised by planting slips or cuttings of the young branches in the spring or summer season, in the former season in pots, and plunged in a moderate hot-bed, or under a glass frame; but in the latter, in the open ground, being well shaded and watered. They soon become tolerably well rooted, and in the autumn may be potted off into separate pots filled with light loamy earth, and managed in the same manner as other exotic green-house plants during the winter.

The annual and perennial sorts afford ornament and variety among other plants of the flower kind in the borders, &c. and the shrubby kinds produce variety in green-house collections.

2. SCILLA CAMPANULATA.

BELL-FLOWERED SQUILL.

THIS genus contains plants of the hardy, bulbous-rooted, perennial kind.

It belongs to the class and order *Hexandria Monogynia*, and ranks in the natural order of *Coronariæ*.

The characters are: that there is no calyx: the corolla has six ovate petals, spreading very much, deciduous: the stamina have six awl-shaped filaments, shorter by half than the corolla: anthers oblong, incumbent: the pistillum is a roundish germ: style simple, length of the stamens, deciduous: stigma simple: the pericarpium is a subovate capsule, smooth, three-grooved, three-celled, three-valved: the seeds many, roundish.

The species are: 1. *S. maritima*, Officinal Squill; 2. *S. Lilio-Hyacinthus*, Lily-rooted Squill; 3. *S. Italica*, Italian Squill; 4. *S. Peruviana*, Peruvian Squill; 5. *S. amœna*, Nodding Squill; 6. *S. campanulata*, Spanish Squill; 7. *S. autumnalis*, Autumnal Squill.

The first has a very large root, somewhat pear-shaped, composed of many coats as in the Onion, and having several fibres coming out at the bottom, and striking deep in the ground. From the middle of the root arise several shining leaves, a foot long, and two inches broad at their base, lessening all the way to the top, where they end in points; they continue green all the winter, and decay in the spring: then the flower-stalk comes out, rising two feet high, naked about half way, and terminated by a pyramidal thyrse of flowers, which are white. It is a native of Spain, Portugal, &c. flowering here in April and May.

There are varieties with a red, and with a white root.

The second species has a scaly root like the Lily; it is oblong

and yellow, very like that of Martagon: the leaves are shaped like those of the White Lily, but are smaller: the stalk is slender, and rises a foot high; it is terminated by blue flowers, which appear in June. It is a native of Spain, Portugal, &c.

The third has a roundish solid bulb, like that of the hyacinth: the leaves come out sparsedly, and are very like those of the English hare-bells: the stem seven or eight inches high, terminated by clustered flowers of a pale blue colour; at first disposed in a sort of umbel or depressed spike, but afterwards drawing up to a point and forming a conical corymb.

The fourth species has a large solid root, raised a little pyramidal in the middle, covered with a brown coat, from this come out before winter five or seven leaves, six or eight inches long, of a lucid green, keeled, and spreading almost flat on the ground: from the centre of these come out one, two, or three scapes, thick, succulent, six or eight inches high, terminated by a conical corymb of flowers, upon pretty long pedicels.

There are varieties with a deep blue, and with a white flower; it is often known by the name of Hyacinth of Peru. It is a native of Spain, Portugal, and Barbary.

The fifth has a large solid purplish root, from which come out five or six leaves, lying on the ground, above a foot long, and an inch broad, keeled, channelled, and of a lucid green; from among these arise two, three, or four purplish stalks, eight or nine inches high, sustaining towards the top five or six flowers, which come out singly from the side; they are of a violet-blue colour, and appear in April. It is a native of the Levant.

In the sixth species the bulb is oblong, white, whence come out five or six leaves a foot long, and half an inch broad, of a lucid green, and a little keeled: scape nine or ten inches high, firm, and sustaining many flowers at the top, disposed in a loose panicle, each on a pretty long pedicel which is erect, but the flower itself nods: the corolla is of a deep blue-violet colour. It is a native of Spain and Portugal, flowering in May.

The seventh has the bulb ovate-roundish, coated, whitish: the

leaves numerous, much shorter than the scape, two or three inches long, linear, obtuse, channelled, spreading, scape from three or four to six inches in height, round, upright, striated, below whitish green, above purplish, appearing villose when magnified. Sometimes there is a second scape: the flowers six, ten, or even twenty in a corymb, which is soon lengthened out into a raceme. It is a native of France, Spain, &c.

It is observed, that "most old writers distinguish a larger and a smaller sort; but these differ merely in size: and some have noticed a variety with white flowers."

Culture.—These plants may be increased by offsets from the roots, and by seeds, but the first is the better mode.

The offsets may be taken off every other year, and be planted out at the time the leaves and stems decay.

The seed should be sown in the autumn, on light mould, in shallow boxes or pans, in the same manner as the Hyacinth, the same circumstances being attended to in the culture. The plants are long in flowering in this way, except in the last species, which should have a dry loamy soil.

The first sort, as being a native of the sea-shores, cannot be well propagated in other situations, as the plants are apt to be destroyed by the frosts in winter, and to grow indifferently in the summer season from the want of salt water.

They afford variety in the beds and borders of pleasure-grounds.

PLATE LII.

1. SEDUM ANACAMPSEROS.

EVERGREEN ORPINE.

THIS genus contains plants of the hardy herbaceous succulent kind.

It belongs to the class and order *Decandria Pentagynia*, and ranks in the natural order of *Succulentæ*.

The characters are: that the calyx is a five-cleft perianth, acute, erect, permanent: the corolla has five petals, lanceolate, acuminate, flat, spreading: nectaries five; each a very small emarginate scale, inserted into each germ at the base on the outside: the stamina have ten awl-shaped filaments, length of the corolla: anthers roundish: the pistillum has five oblong germs, ending in more slender styles: stigmas obtuse: the pericarpium five capsules, spreading, acuminate, compressed, emarginate towards the base, opening on the inside longitudinally by a suture: the seeds numerous, very small.

The species cultivated are 1. *S. Telephium*, Orpine Stonecrop; 2. *S. Anacampseros*, Evergreen Orpine; 3. *S. Aizoon*, Yellow Stonecrop; 4. *S. populifolium*, Poplar-leaved Stonecrop; 5. *S. stellatum*, Starry Stonecrop; 6. *S. Cepæa*, Purslane-leaved Stonecrop; 7. *S. dasyphyllum*, Thick-leaved Stonecrop; 8. *S. reflexum*, Yellow Stonecrop; 9. *S. rupestre*, Rock Stonecrop; 10. *S. Hispanicum*, Spanish Stonecrop; 11. *S. album*, White Stonecrop; 12. *S. acre*, Biting Stonecrop, or Wall Pepper; 13. *S. sexangulare*, Insipid Stonecrop; 14. *S. Anglicum*, English or Mild White Stonecrop; 15. *S. annuum*, Annual Stonecrop.

The first has a perennial tuberous root: the stems from one to



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Engraved by W. A. Wilson

Sedum Anacampseros
Evergreen Crispine

Sophora Tetralopha
Winged-Podded Sophora

two feet high and upwards, upright, simple or unbranched, leafy, round, smooth, solid, reddish and often dotted with red: the leaves almost covering the stem, sessile, ovate, fleshy, tooth-serrate, smooth and even, of a blueish-green colour: the corymbs terminating, many-flowered, close or heaped together: the flowers deep purple, very rarely white in this climate, though that seems to be the most common colour in some foreign countries. It is a native of Portugal.

There are several varieties, as with purple flowers, with white flowers, with broad leaves, and the Greater Orpine.

The second species has fibrous perennial roots: the stems trailing: the leaves standing alternate round the stems, almost an inch long, and half an inch broad: the flowers in a compact corym, sitting close on the top of the stem: they are star-shaped, of a purple colour, and appear in July. It is an evergreen; and a native of Germany.

The third has a perennial root, composed of many thick fleshy fibres, from which come out several stalks rising near a foot high: the leaves are alternate on every side, thick, two inches and a half long, and three quarters of an inch broad, and slightly serrate: the flowers bright yellow. It is a native of Siberia, flowering from July to September.

The fourth species has the leaves cordate, thick and fleshy: the stem herbaceous, branched, erect, patulous, even, a foot high: the leaves alternate, remote, only at the ramifications, blunt, fleshy, smooth. When it grows in an open situation, exposed to the sun, the leaves and stalks become of a bright red colour. It is a native of Siberia, and the only hardy Sedum cultivated with us that has a shrubby stalk: the leaves are deciduous. It flowers in July and August, and is proper for a rock plant.

The fifth is a low annual plant: the stalks rise three inches high, dividing at top into two or three parts: the flowers come out singly from the side of the stalk; are white, star-pointed, and succeeded by star-pointed rough capsules. It is a native of Germany, &c.

The sixth species has also an annual root: the stalks six or seven

inches high, dividing into smaller branches, which sustain small white flowers, growing in large panicles. It is a native of Germany, France, &c.

There is a variety which has the stem more erect, and the lower leaves in threes or fours, the next opposite, and the uppermost alternate.

The seventh has a perennial (biennial) root, composed of small white fibres: the stems numerous, weak, prostrate and creeping, about three inches long or somewhat more, branched, in tufts, round, weak, clammy, leafy: the flowering branches erect: the leaves mostly opposite, closely imbricate, sessile, very thick and fleshy, broader than long, convex on the lower, nearly plane on the upper surface, glaucous often with a tinge of purple; dotted and sometimes having a net of red veins: on the flowering branches they are alternate. It is a native of many parts of Europe, as France, &c.

When introduced into a garden, it propagates itself freely upon walls, in waste places, and about garden pots; and no plant is better adapted to the purpose of decorating rock-work, as it grows without any trouble, in any aspect, multiplying very much by young shoots, and always looks beautiful.

The eighth species has also a perennial root: the stems round, leafy, branched at the base, often hanging down, erect at the top: the leaves scattered, alternate, adnate-sessile, loose at the base, and produced, erect above, compressed, acuminate, extremely succulent, smooth, rather glaucous, frequently tinged with red; the lower ones turned back; when old they easily fall off: the flowers are in a terminating subcymed panicle, with many-flowered branches, for the most part recurved: the flowers erect, bright yellow. It is a native of Europe, and is common here on walls and thatched roofs, and rocks in the northern counties, flowering in July.

The ninth is a little smaller than the eighth: the leaves closely imbricate (before flowering) in five or six rows, glaucous, flatted a little, acuminate; on the flowering stem somewhat remote, as in that sort, all erect, not bent back at the point. According to Withering,

the disposition of the leaves in five or six rows may be best observed by viewing the plant with the ends of the branches opposed to the eye: the panicle subcymed, many-flowered, with the branchlets scarcely reflexed: the flowers of a bright yellow or gold colour, often six-cleft. It is a native of England and Wales, &c. perennial, flowering in July.

This, as well as the above, is cultivated in Holland and Germany to mix with lettuces in salads.

The tenth has a slender, fibrous, perennial root: the stems several, a hand high, reclining at the base, and then erect, round, tinged with red: the leaves, on the flowering stems, pale green dotted with purple, oblong, thickish, round on one side and flat on the other; towards the top, under the flowers, more swelling and shorter: leaves on young plants or barren shoots, in bundles, glaucous, without any purple dots, thinner, from a narrow base widening gradually, and ending in a blunt point: the stems divide at top into a few branchlets, forming a sort of umbel, (or rather cyme) bearing sessile, star-like white flowers, stained with pale purple from a purple groove running along the petals: these are six, sometimes seven in number, keeled and cusped. It is a native of Spain and Carinthia, flowering in July.

The eleventh species has a perennial, fibrous root: the stems decumbent at bottom, and there throwing out fibres; flowering stems upright, from three inches to a span in height, round, leafy, branched, smooth: the leaves scattered thinly, spreading out horizontally, sessile, cylindrical, very blunt, smooth, fleshy, somewhat glaucous and generally reddish: panicle terminating, alternately branched, subcymose, many-flowered, smooth. It is a native of Europe, on rocks, walls and roofs, flowering in July.

It is eaten by some as a pickle.

The twelfth has also a perennial, fibrous root: the stems numerous, growing in tufts, much branched, decumbent, and creeping at the base, then upright, three inches high, smooth, round, very leafy: the leaves closely imbricate, blunt, flattened a little, from upright spreading, loose at the base: the cymes terminating, solitary, few-

flowered: the flowers erect, sessile. It is a native of Europe, flowering in July.

The thirteenth species has the habit of the preceding sort, but is somewhat larger: the leaves are subcylindrical; not ovate, and come out mostly by threes in a double row, and hence appear to be imbricate in six rows; this is most obvious in the young shoots: they are very spreading, loose at the base, and scarcely gibbous: the cyme is leafy: the flowers of a golden-yellow colour. It is not acrid. It is a native of many parts of Europe, flowering at the end of June.

The fourteenth has an annual, fibrous root: the stems in tufts, decumbent at the base, smooth, red, leafy: the leaves mostly alternate or nearly opposite, bluntish, somewhat glaucous, produced and loose at the base: the cymes terminating, solitary, almost leafless, racemed: the flowers erect, five-cleft. It is a native of Britain and Norway.

The fifteenth species is also an annual plant, with an erect stalk, seldom rising above two or three inches high; the leaves are of a grayish colour: the flowers are small and white, and grow at the top of the stalk, in a reflexed spike. It is a native of the North of Europe.

Culture.—These plants are all raised without much difficulty, by proper care and attention to have the soil dry and of the poor sandy kind.

Culture in the Orpine sorts.—These may all be readily increased by planting cuttings, during the summer months, in light mould in a shady situation, or in pots placed in similar situations. The plants in the open ground, as well as those in pots, should be kept clean from weeds, and be watered frequently when the weather is dry.

They may likewise be raised by parting the roots, and planting them in a similar manner in the spring or autumn. When the plants are once well established, they spread rapidly, and require little or no care.

Culture in the Stonecrop kind.—These are raised without much trouble, by planting out their trailing stalks in the spring or summer

season, which readily take root. They thrive most perfectly on old walls, buildings, or rock-works. Where cuttings or roots of the perennial kinds are planted in some soft mud, placed upon such situations, they quickly take root and spread into the different joints and crevices, covering the whole in a very short time.

The seeds of the annual sorts also, when sown soon after they become ripe in such situations, soon come up and support themselves without further trouble.

Most of the perennial sorts are kept in the nurseries in full plants, fit for setting out in the borders, pots, &c. either in the spring for flowering the same year, or in the autumn to flower in the following year.¹

These plants may be planted out in any dryish light soil, in borders, beds, and other places, and in the sides of dry banks, or in any elevated rubbishy soil, as well as in pots to move to different parts occasionally; or also some of the evergreen kinds, to introduce in their pots among winter plants under shelter, to increase the variety. In most sorts, they may also be introduced as rock plants, to embellish artificial rock-works, ruins, and other similar places in pleasure-grounds. The Stonecrops and other low trailing kinds may also be made to occupy the tops of any low walls, pent-houses, sheds, or other low buildings.

The twelfth and thirteenth sorts may likewise be disposed in patches towards the front of borders, &c. as they spread thick and tufty close to the ground, and flower abundantly; and being planted in pots, are proper to place in the outside of windows, copings of low walls, and in balconies, and court yards, in assemblage with other low fancy plants; they will closely overspread the surface, and flower profusely as far as they extend.

2. SOPHORA TETRAPTERA.

WINGED-PODDED SOPHORA.

THIS genus contains plants of the herbaceous, flowery, perennial, and shrubby exotic kinds.

It belongs to the class and order *Decandria Monogynia*, and ranks in the natural order of *Papilionaceæ* or *Leguminosæ*.

The characters are: that the calyx is a one-leafed perianth, short, bell-shaped, gibbous at the base above: mouth five-toothed, oblique, obtuse: the corolla papilionaceous, five-petalled: standard oblong, gradually wider, straight, reflexed at the sides: wings two, oblong, appendicled at the base, length of the standard: keel two-petalled, with the petals conformable to the wings, the lower margins approximating and boat-shaped: the stamina have ten filaments, distinct, parallel, awl-shaped, length of the corolla within the keel: anthers very small, rising: the pistillum is an oblong germ, cylindrical: style size and situation of the stamens: stigma obtuse: the pericarpium is a legume very long, slender, one-celled, knobbed at the seeds: the seeds very many, roundish.

The species cultivated are: 1. *S. tetraptera*, Wing-podded Sophora; 2. *S. microphylla*, Small-leaved Shrubby Sophora; 3. *S. alopecuroides*, Fox-tail Sophora; 4. *S. australis*, Blue Sophora; 5. *S. tinctoria*, Dyer's Sophora; 6. *S. alba*, White Sophora; 7. *S. tomentosa*, Downy Sophora; 8. *S. occidentalis*, Occidental Sophora; 9. *S. japonica*, Shining-leaved Sophora; 10. *S. capensis*, Vetch-leaved Sophora; 11. *S. aurea*, Golden-flowered Sophora; 12. *S. myrtillifolia*, Round-leaved Sophora.

The first is a magnificent tree, displaying its pendulous branches of large golden flowers in May and June. It is a native of New Zealand.

The second species is a smooth tree, with small leaves almost wedge-shaped; the flowers large and yellow; the legume compressed, torulose, flat at the back and belly, keeled at the sides with longitudinal membranes. It is a native of New Zealand, flowering in May and June.

The third has a perennial creeping root, from which arise several erect stalks from three to four feet high: the leaves unequally pinnate: the flowers pale blue and small, in long axillary spikes standing erect close to the stalk: they smell sweet. It is a native of the Levant, flowering in July and August.

The fourth species has a herbaceous stem, most commonly decumbent: the leaves cuneate-oblong, smooth, yellowish green; the stipules ensiform, longer than the shortest petiole; the flowers are blue. It is a native of Carolina, flowering in June and July.

The fifth has a perennial root, from which arise several stalks about a foot and half high, sending out from the bottom a great number of small branches: the flowers come out towards the end of the branches in short spikes; are yellow, and appear in July. It is a native of Barbadoes and Virginia.

The sixth species has the stem even, high, dark purple: the leaves like those of Laburnum, even, elliptic, smooth on both sides, an inch and half long: the stipules scarcely any: the raceme a foot long, pendulous: the flowers white, the size of those of Laburnum. It flowers in June, and is a native of Virginia and Carolina.

The seventh species has a downy stem, six or seven feet high: the leaves unequally pinnate, composed of five or six pairs of leaflets: the flowers in short loose axillary spikes, large and yellow, not unlike those of Spanish Broom, void of scent: the pods larger, woolly, five or six inches long, having four or five large swellings, in each of which is a roundish brown seed as big as a pea. It is a native of Ceylon.

The eighth is a shrub, with a round hoary-pubescent stem, and round spreading subtomentose branches, six or seven feet in height: the leaves on alternate, long, spreading, round, hoary petioles, thickened at the base: leaflets opposite, mostly six-paired with an odd

one, entire, flat, hoary, white tomentose beneath, on short round petioles: the flowers in a sort of spike: the peduncle terminating, erect, a foot long, simple, round, many-flowered: flowers close, biggish, peduncled, yellow. It is a native of the West Indies; flowers there in May and June.

The ninth species has the branches round, even, purplish: the leaves alternate, unequally pinnate; leaflets subopposite, on very short petioles, oblong, blunt with a point, quite entire, glaucous beneath, smooth, spreading an inch long: the flowers on paniced racemed branchlets, of a white colour. It is a native of Japan.

The tenth is a tender pubescent shrub, when more advanced in its wild state naked: the leaves alternate, unequally pinnate: leaflets twenty-three, narrow-lanceolate, equal, quite entire, shining above, subtomentose beneath: the raceme terminating, composed of white recurved flowers. It is a native of the Cape.

The eleventh species is a shrub the height of a man: the root has the smell and taste of liquorice: the stem upright, round tubercled, gray: branches alternate, spreading, like the stem: the leaves alternate, unequally pinnate, spreading, eight inches long: petioles round on one side, channelled on the other, pubescent: the leaflets from twelve to fifteen pairs, opposite, on short petioles, those of the outmost longer, quite entire, one-nerved, bright green, paler beneath, spreading very much, flat: the stipules linear, acute, pubescent, brownish, erect, permanent: the racemes axillary, solitary, peduncled, spreading, bracted, pubescent, four or five inches long: the flowers alternate, nodding, yellow, eight or nine lines in length, on round pedicels jointed at the top. It is a native of Africa, and flowers there in July.

The twelfth has a shrubby, round, leafy, even stem: the branches almost upright, tomentose, somewhat angular towards their tops: the leaves scattered, on short petioles, ten lines long, and four broad, quite entire, rounded at the end with a reflexed point, grooved above and keeled beneath, coriaceous. On each side of the petiole an awl-shaped tomentose stipule, twice as long as the petiole: the flowers towards the end of the branches from the axils of the leaves,

solitary, on peduncles the length of the adjacent leaf, white-tomentose: seldom two-flowered. It is a native of the Cape, flowering from November to January.

Culture.—The first five sorts are hardy, and may be increased by seeds or parting the roots.

The seeds should be sown in the spring in pots of fine mould, and when the plants are come up they should be removed into separate pots, till they have obtained sufficient strength, when they may be planted out where they are to grow.

The roots may likewise, in many of the sorts, be parted at the same season and planted in pots, or where they are to remain.

The first and second sorts may also be raised from cuttings and layers, planted or laid down at the same season. These, when planted against a wall, so as to be protected from frost in winter, succeed very well.

All the other sorts are tender, and require the hot-house or stove. They are increased by sowing the seed in the early spring, in pots filled with fine mellow light mould, and plunged in the hot-bed under glasses, or in the bark-bed. When the plants have advanced a little in growth, they should be removed into separate pots, filled with soft loamy mould, being well watered and replunged in the bark-bed till fresh rooted; being afterwards managed as other exotic stove plants, but with little water. They likewise sometimes succeed by layers and cuttings, treated in the same manner.

The first sorts afford variety in the borders and among potted plants, and the latter in stove collections.

PLATE LIII.

1. SEMPERVIVUM ARACHNOIDEUM.

COBWEB HOUSELEEK.

THIS genus contains plants of the succulent, hardy, herbaceous, evergreen, and shrubby perennial kinds.

It belongs to the class and order *Dodecandria Polyginia*, (Dodecagynia,) and ranks in the natural order of *Succulentæ*.

The characters are: that the calyx is a six to twelve-parted perianth, concave, acute, permanent: the corolla has six to twelve petals, oblong, lanceolate, acute, concave, a little bigger than the calyx; the stamina have from six to twelve filaments (or more), subulate-slender: anthers roundish: the pistillum from six to twelve germs, in a ring, erect; ending in as many spreading styles: stigmas acute.

The species cultivated are: 1. *S. tectorum*, Common Houseleek; 2. *S. globiferum*, Globular Houseleek; 3. *S. arachnoideum*, Cobweb Houseleek; 4. *S. montanum*, Mountain Houseleek; 5. *S. arboreum*, Tree Houseleek; 6. *Canariense*, Canary Houseleek.

The first has a perennial fibrous root: the root-leaves in form of a full-blown double-rose, sessile, wedge-shaped or obovate, somewhat more than an inch long, very fleshy, thick, flat above, a little convex beneath, keeled and whitish, smooth on both sides, the edges fringed with hairs and generally tinged with red, pointed, upright, gradually smaller inwards: offsets on long footstalks, globular, the size of a pigeon's egg or larger, composed of erect leaves lying over each other: the flowering-stem upright, from nine inches to a foot in height, round, fleshy, pubescent, having alternate, lanceolate, thinner leaves on it, of a reddish colour, at top branched and form-

ing a sort of corymb; the branches spreading and bending back: the flowers numerous, clustered, upright, pubescent, flesh-coloured, all growing one way. It is a native of Europe, flowering in July.

The second species has the leaves much narrower, and the heads furnished with a greater number of them than those of the first sort, which grow more compact, and are closely set on their edges with hairs: the offsets are globular, their leaves turning inward at the top, and lying close over each other; these are thrown off from between the larger heads, and, falling on the ground, take root, whereby it propagates very fast: the flower-stalks are smaller, and do not rise so high as those of the former; and the flowers are of a paler colour. It is a native of Russia, Austria, &c. flowering in June and July.

The third has much shorter and narrower leaves than the first: the heads are small and very compact: the leaves are gray, sharp-pointed, and have slender white threads crossing from one to the other, intersecting each other in various manners, so as in some measure to resemble a spider's web: the flower-stalks about six inches high, succulent and round, having awl-shaped succulent leaves placed on them alternately: the upper part divides into two or three branches, upon each of which is a single row of flowers ranged on one side; each composed of eight lanceolate petals, of a bright red colour, with a deep-red line running along the middle; they spread open in form of a star. It is a native of Switzerland and Italy, flowering in June and July.

The fourth species greatly resembles the first, but the leaves are smaller, and have no indentures on their edges: the offsets spread out from the side of the older heads, and their leaves are more open and expanded: the flower-stalk is nine or ten inches high, having some narrow leaves below; the upper part is divided into three or four branches, closely set with deep red flowers composed of twelve petals, and twenty-four stamens with purple anthers. It is a native of Germany, &c. flowering in June and July.

The fifth rises with a fleshy smooth stalk eight or ten feet high, dividing into many branches, which are terminated by round heads or clusters of leaves lying over each other like the petals of a double

rose, succulent, of a bright green, and having very small indentures on their edges: the stalks are marked with the vestiges of the fallen leaves, and have a light brown bark: the flower-stalks rise from the centre of these heads; and the numerous bright-yellow flowers form a large pyramidal spike, or thyse. It is a native of Portugal, &c. flowers through the winter, commonly from December to March.

The sixth species seldom rises above a foot and a half high, unless the plants are drawn up by tender management: the stalk is thick and rugged, chiefly occasioned by the vestiges of decayed leaves: at the top is a very large crown of leaves, disposed circularly like a full-blown rose, large, succulent, soft to the touch, and pliable, ending in obtuse points which are a little incurved: the flower-stalk comes out from the centre, and rises near two feet high, branching out from the bottom, so as to form a regular pyramid of flowers, which are of an herbaceous colour. It is a native of the Canary Islands, flowering in June and July.

A variety of this with variegated leaves was obtained from a branch accidentally broken from a plant of the plain sort, at Badmington, the seat of the Duke of Beaufort.

Culture.—The different herbaceous sorts are all capable of being increased without difficulty by planting their off-set heads, which should be slipped with a few root fibres to them, and planted in the spring season on rubbish rock-works, or other places, or in pots for variety: and the tender green-house sorts may be raised from cuttings of the branches and from seeds; but the first is the better method.

The cuttings should be made from the smaller branches in the early summer months, and be planted out in pots, or a bed of fine earth, in warm shaded situations: where the cuttings are succulent, they should be laid in a dry place for a few days to heal over the cut part; they should be shaded from the sun; and those in pots lightly watered in dry weather: when they are become well rooted, they should be carefully removed into separate pots of a middle size, being placed in the green-house. Some forward these plants by means of bark hot-beds.

The seeds of the Canary kind should be sown in the autumn or early spring in pots of light mould, placing them in a garden-frame to protect them from frost, having the air freely admitted in mild weather: when the plants are come up, and have a little strength, they should be removed into small pots and placed in the green-house.

The first sorts are ornamental on walls, buildings, and rock-works as well as in pots; and the last two kinds among other potted green-house plants.

2. STRELITZIA REGINÆ.

CANNA-LEAVED STRELITZIA.

THIS genus affords a plant of the herbaceous exotic perennial kind.

It belongs to the class and order *Pentandria Monogynia*, and ranks in the natural order of *Scitamineæ*.

The characters are: that the calyx is an universal spathe, terminating, one-leafed, channelled, acuminate, from spreading declining, many-flowered, involving the base of the flowers; partial spathes lanceolate, shorter than the flowers: perianth none: the corolla is irregular: petals three, lanceolate, acute; the lowest boat-shaped; the two upper bluntly keeled: nectary three-leaved: the two lower leaflets a little shorter than the petals, from a broad base awl-shaped, waved at the edge, folded together, including the genitals, towards the tip behind augmented with a thick appendix, in form of half an arrow head; the lowest leaflet short, ovate, compressed, keeled: the stamina have five filaments, filiform, placed on the receptacle: three in one leaflet of the nectary; two with the style enclosed in the other leaflet: anthers linear, erect, commonly longer than the filaments, included: the pistillum is an inferior germ, oblong, obtusely three-cornered: style filiform, length of the stamens: stigmas

three, awl-shaped, higher than the petals, erect, at the beginning of flowering time glued together: the pericarpium is a subcoriaceous capsule, oblong, obtuse, indistinctly three-cornered, three-celled, three-valved: the seeds numerous, adhering in a double row to the central receptacle.

The species is *S. Regina*, Canna-leaved Strelitzia.

It has all the leaves radical, petioled, oblong, quite entire, with the margin at bottom waved and curled, very smooth, glaucous beneath, coriaceous, a foot long, permanent: the petioles somewhat compressed, three feet long and more, the thickness of the thumb, sheathing, erect, smooth: the scape the length and thickness of the petioles, erect, round, covered with alternate, remote, acuminate sheaths, green with a purple margin: the general spathe a span long, green on the outside, purple at the edge; partial spathes whitish: the petals yellow, four inches long: the nectary blue: according to Curtis, the spathe contains about six or eight flowers, which becoming vertical as they spring forth, form a kind of crest, which the glowing orange of the corolla, and fine azure of the nectary, render truly superb. A native of the Cape.

Culture.—These plants are raised from seeds, brought from their native situation, and sown in pots of good fine mould, plunged in a hot-bed to get them up; the plants when of some growth should be removed into separate pots, and be replunged in the tan-pit of the stove; afterwards, when the plants are large, they should have plenty of mould, that the roots may be extended into the rotten tan, and in that way render them more strong for blowing their flowers: it may likewise sometimes be raised from the roots, when they are suffered to strike in the above manner; it is said to succeed best in the dry stove and conservatory.

It is highly ornamental among stove plants.



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1 *Scalidago stricta*
Willow-leaved Golden Rod2 *Senecio elegans*
Double purple Groundsel3 *Spartium junceum*
Spanish Broom

PLATE LIV.

1. SOLIDAGO STRICTA.

WILLOW-LEAVED GOLDEN ROD.

THIS genus contains plants of the tall, herbaceous, flowering, perennial kind.

It belongs to the class and order *Syngenesia Polygamia Superflua*, and ranks in the natural order of *Compositæ Discoideæ*.

The characters are: that the calyx is oblong, imbricate, common: scales oblong, narrow, acuminate, straight, converging: the corolla is compound radiate: corollets hermaphrodite tubular, very many, in the disk:—female ligulate, fewer than ten, (commonly five) in the ray: proper of the hermaphrodite funnel-form, with a five-cleft, patulous border:—female ligulate, lanceolate, three-toothed: the stamens in the hermaphrodites: filaments five, capillary, very short: anthers cylindrical, tubular: the pistillum in the hermaphrodites: germ oblong: style filiform, length of the stamens: stigma bifid, spreading:—in the females: germ oblong: style filiform, length of the hermaphrodite: stigmas two, revolute: there is no pericarpium: calyx scarcely changed: the seeds in the hermaphrodites solitary, obovate-oblong: seed-down capillary:—in the females very like the others: the receptacle flattish, naked.

The species cultivated are: 1. *S. Virgaurea*, Common Golden-rod; 2. *S. Canadensis*, Canadian Golden-rod; 3. *S. altissima*, Tall Golden-rod; 4. *S. Mexicana*, Mexican Golden-rod; 5. *S. viminea*, Twiggy Golden-rod; 6. *S. bicolor*, Two-coloured Golden-rod; 7. *S. rigida*, Hard-leaved Golden-rod; 8. *S. cæsia*, Maryland Golden-rod; 9. *S. flexicaulis*, Crooked-stalked Golden-rod; 10. *S. sempervirens*, Narrow-leaved Evergreen Golden-rod.

The first has a perennial root, of long simple fibres: the stem very various in height, from ten inches to three feet, commonly branching into a panicle, more or less flexuose, never entirely stiff and straight, leafy, angular, striated, a little downy; at the base round and often purple: the leaves elliptic-lanceolate, somewhat rugged, and stiffish; those next the root wider, on longer petioles, and more widely serrate; stem-leaves for the most part indistinctly crenate-serrate, sometimes almost quite entire, varying in size, often recurved; the upper ones gradually diminishing into lanceolate downy bractes: all somewhat hairy, or covered with short stiff down, paler underneath; footstalks winged: the flowers in terminating and axillary erect clusters or corymbs, forming a dense leafy pubescent panicle, which varies extremely as to luxuriance and number of flowers; in a barren soil and on mountains being shorter, more dense and less compound. They are of a golden colour. It is a native of Europe, Siberia, and Japan, flowering from July to September. It has sometimes the names of Wound-wort and Aaron's rod.

There are several varieties; as the purple-stalked broad-leaved, which has the stalks stiff, purplish brown, two feet high: the panicles axillary and terminating; each flower on a long slender footstalk, pale yellow, appearing at the beginning of August: the leaves lanceolate, almost four inches long, and a quarter of an inch broad, deeply serrate, pale green beneath.

The Common Golden-rod, which has the lower leaves ovate-lanceolate, two inches long and an inch broad, slightly serrate, on pretty long footstalks: the stems slender, a foot and half high; with small, narrow, entire, sessile leaves: the flowers in panicled bunches, clustered together, forming a thick erect spike, appearing in August and September. The narrow-leaved, which has the stalk round, smooth, a foot and half high: the leaves narrow-lanceolate, an inch and quarter long, and an eighth of an inch broad, almost entire, sessile: the flowers in small clustered branches from the axils, to which they sit very close; and the stalk is terminated by a roundish bunch. The Dwarf Golden-rod, which has the lower leaves indented: the stalk seldom more than a foot high, branching out almost from the

Bottom : the branches terminated by short, clustered, erect spikes : the leaves on the stem and branches very narrow, acute-pointed and entire. The Welch Golden-rod, which has the lower leaves narrow-lanceolate, an inch and half long, and a quarter of an inch broad, smooth, slightly serrate, a little hoary on the under side : the stalk about six inches high, with the same sort of leaves on it, only smaller : the flowers in roundish clustered terminating spikes, much larger than those of the common sort, and appearing five or six weeks earlier in the season.

The second species has the stalks round, smooth, and two feet high ; the leaves narrow and rough, with three longitudinal veins, two inches and a half long, and a quarter of an inch broad in the middle, sessile, ending in acute points, and having sometimes a few slight serratures : the flowers in a roundish terminating panicle, the lower spikes of which are reflexed, but those at the top erect and joined very close. These appear in July. It is a native of Canada.

The third has the stems numerous, straight, rigid, from three to four feet and a half high, the thickness of a straw or more at the base, round, slightly streaked, hirsute, clothed from top to bottom at short distances with leaves, which are widish, oblong, pointed, rough, at their upper and lower parts thinly crenate, in the middle serrate, the serratures minutely crenate ; those on the upper branches not serrate, but only minutely crenate ; they are green on both sides, with a few oblique veins, and are hairy along the nerve and veins at the back, but without hairs every where else : the flowers very many, on the upper branches, in long rod-like spikes, somewhat reflexed, having four, five, or six florets in the ray : they appear in August and September. It is a native of New England, Virginia, and Carolina.

There are several varieties ; as the Tallest Golden-rod—the Hairy Golden-rod—the Recurved Golden-rod—the Virginia Golden-rod.

The fourth species has oblique stalks, a foot and half high, smooth,

with a brown bark: the leaves smooth, spear-shaped, entire, three inches long, and three quarters of an inch broad: the flowers come out on branching footstalks on the side of the stalks, are ranged on one side, and have a few small leaves under the flowers, which appear at the end of August. It is a native of North America.

The fifth has smooth erect stalks, a foot and half high: the leaves narrow, smooth, entire, dark green: the flowers in close compact panicles at the top of the stalk; spike short, clustered: the flowers large, bright yellow, appearing in September. It is a native of North America.

The sixth species has the lower leaves oval, six inches long, and three broad, ending in acute points, serrate, having several strong longitudinal veins on long footstalks which have leafy borders or wings: the stalks a foot and half high, branching out almost from the bottom, garnished with small, spear-shaped, entire leaves: the branches grow erect, are closely furnished with small leaves, and are terminated by short close spikes of white flowers; or rather, having a yellow disk and a white ray, in close racemes. It is a native of North America, flowering in September.

The seventh has the stalks two feet high: the lower leaves ovate, stiff, smooth and entire, four inches long, and two inches and a half broad, on footstalks four inches in length; those on the upper part of the stalk are spear-shaped, entire, and embrace the stalk half round: the flowers in loose, spreading, terminating panicles; spikes short, clustered, bright yellow, appearing in August. It is a native of New England.

The eighth species has the stalk slender, smooth, a foot and half high: the leaves narrow-spear-shaped, two inches long, and half an inch broad, indented on their edges, and ending in acute points: the flowers in a loose terminating panicle, with the spikes closer and thicker towards the top. It is a native of Maryland, flowering in September.

The ninth has the lower leaves four inches long, and almost two broad; their footstalks two inches long, having a membrane or wing

on each side: the stalk rises two feet high; they are slender, smooth, and of a light purple colour: the leaves ovate-lanceolate, indented, near two inches long, and three quarters of an inch broad, of a pale green on their under side: the flowers are produced in short bunches from the axils almost the whole length; the lower spikes are an inch long, but the upper ones are almost round: the flowers are of a brimstone colour, and appear late in August. It is a native of Canada.

The tenth species is remarkable for its red stalk, higher than a man, with very smooth and somewhat fleshy leaves, a little rugged at the edge, continuing the whole winter; it flowers very late, so that in the Northern countries the frost commonly prevents them from opening. It is a native of North America.

Culture.—These plants are all readily increased by slipping or parting the roots, and planting them out in the autumn or winter soon after their stems decay, or very early in the spring before they begin to shoot; but the former is the better season, in the places where they are to grow: they succeed in almost any soil or situation, and afterwards require only to be kept clean from weeds, and to have the decayed stems cut down when they begin to decay in the autumn. When they have increased considerably in the roots, they should always be slipped as above.

In planting out they require much room, as they spread considerably.

They afford considerable variety and ornament in larger borders and clumps.

2. SENECIO ELEGANS.

DOUBLE PURPLE GROUNDSEL.

THIS genus contains plants of the herbaceous, annual, and perennial kinds.

It belongs to the class and order *Syngenesia Polygamia Superflua*, and ranks in the natural order of *Compositæ Discoideæ*.

The characters are: that the calyx is common calyced, conical, truncate: scales awl-shaped, very many, parallel in a cylinder contracted above, contiguous, equal, fewer covering the base imbricate-wise, the tops mortised: the corolla compound, higher than the calyx: corollets hermaphrodite, tubular, numerous in the disk: females ligulate in the ray, if any present: proper in the hermaphrodites funnel-form: border reflex, five-cleft: in the females, if any, oblong, obscurely three-toothed: the stamens in the hermaphrodites, filaments five, capillary, very small: anther cylindric, tubular: the pistillum in both: germ ovate: style filiform, length of the stamens: stigmas two, oblong, revolute: there is no pericarpium: calyx conical, converging: the seeds in the hermaphrodites solitary, ovate: pappus capillary, long; in the females very like the hermaphrodites: the receptacles naked, flat.

The species cultivated are: 1. *S. hieracifolius*, Hieracium-leaved Groundsel; 2. *S. Pseudo-China*, Chinese Groundsel; 3. *S. hastatus*, Spleenwort-leaved Groundsel; 4. *S. elegans*, Elegant Groundsel, or Purple Jacobæa.

The first is an annual plant, with a round, channelled, hairy stalk, rising three feet high: the flowers in a state of terminating umbel, composed of dirty-white florets. It is a native of North America, flowering in August.

The second species has a perennial root, composed of some thick

fleshy tubers, sending out many fibres on every side; from which come out some large cut leaves shaped like those of the turnep, but smooth: the flower-stalk slender, a foot and half high, sustaining at the top a few yellow flowers. It is a native of the East Indies.

The third has a herbaceous perennial stalk, branching out at the bottom, and rising about two feet and a half high; having narrow leaves at bottom, seven or eight inches long: the upper leaves are smaller, and embracing; they are very clammy: the upper part of the stalk divides into several very long peduncles, each sustaining one yellow flower. It is a native of the Cape, flowering most part of the summer.

The fourth species is an annual plant, having many herbaceous branching stalks, near three feet high: the flowers are produced in bunches on the top of the stalks; are large, the ray of a beautiful purple colour, and the disk yellow. It is a native of the Cape, flowering from June or July till the beginning of autumnal frosts.

There are varieties with very double purple, and with equally double white flowers. The former is now chiefly cultivated.

There are many other species that may be cultivated for variety.

Culture.—The first and two last sorts are readily increased by planting cuttings of the branches in pots filled with fine mould in the summer season, shading them till they have taken root; and, as the winter approaches, removing them under the protection of the greenhouse, where they should remain till May, when they may be planted out in the borders or clumps.

They may likewise be raised from seed, which should be sown in the spring in pots, and placed in a gentle hot-bed.

The second sort should be more carefully attended, being raised from off-sets, which should be planted in pots in the spring season, and plunged in the hot-bed of the stove, where the plants should be constantly kept.

The first and two last sorts afford variety in borders, and among potted plants; and the second in stove collections.

3. SPARTIUM JUNCEUM.

SPANISH BROOM.

THIS genus contains plants of the deciduous and evergreen kinds.

It belongs to the class and order *Diadelphia Decandria* and ranks in the natural order of *Papilionaceæ* or *Leguminosæ*.

The characters are: that the calyx is a one-leafed perianth, cordate-tubular: at the upper edge very short, below towards the tip marked with five toothlets, coloured, small: the corolla papilionaceous, five-celled: standard obcordate, the whole reflexed, very large: wings ovate, oblong, shorter than the standard, annexed to the filaments: keel two-petalled, lanceolate, oblong, longer than the wings, (the carinal margin connected by hairs,) inserted into the filaments: the stamina have ten connate filaments, adhering to the germ, unequal, gradually longer; the uppermost very short; the lower nine-cleft: anthers oblongish: the pistillum is an oblong germ, hirsute: style awl-shaped, rising: stigma growing to the upper side of the top, oblong, villose: the pericarpium is a cylindric legume, long, obtuse, one-celled, two-valved: the seeds many, globe-kidney form.

The species cultivated are: 1. *S. scoparium*, Common Broom; 2. *S. junceum*, Spanish Broom; 3. *S. radiatum*, Starry Broom; 4. *S. monospermum*, White-flowered Single-seeded Broom; 5. *S. sphærocarpum*, Yellow-flowered Single-seeded Broom; 6. *S. Scorpius*, Scorpion Broom; 7. *S. angulatum*, Angular-branched Broom; 8. *S. spinosum*, Prickly Broom.

The first grows from three to six feet high or more, very much branched; the branches upright, rushy, evergreen, angular, flexible, leafy, smooth except the very young ones which are downy; the

leaves ternate, small, ovate, acute, downy and edged with soft hairs bending inwards; the leaf-stalks are also slightly hairy, and flattened: the flowers axillary, solitary or two together, rarely three, nodding, on round smooth peduncles, furnished on each side with a very minute stipule, of a fine yellow colour. It is a native of Europe, flowering in May and June.

There are several varieties, some of which merit a place among flowering shrubs; as that with a purple calyx, and the flowers strongly tinged with orange, as well as that which is very hoary.

The second species has the branches smooth, flexible, eight or ten feet high; the lower ones have small tooth leaves, at the end of the shoots of the same year; the flowers are disposed in a loose spike, are large, yellow, have a strong agreeable odour, appear in July, and in cool seasons continue in succession till September. It is a native of all the Southern countries of Europe.

There is a variety with double flowers.

The third has low stems, with opposite four-cornered branches: the leaves opposite, sub-sessile: leaflets sessile, thin, subpubescent: the petioles extremely short, but permanent, three-cornered, gibbous, very blunt, thicker than the branchlet to be supported: the flowers terminating, in threes, sessile. In its natural state it is a low shrub; when cultivated it becomes much larger, though rarely exceeding two feet and a half in height, but the branches spread very much and form a large bush; they are angular and pliable, and always come out by pairs opposite: the leaves narrow and awl-shaped, placed round the stalk, spreading out like the points of a star: the flowers in small spikes at the end of the branches, bright yellow, but not more than half the size of the second sort, and without-scent. It flowers in June, and is a native of Italy.

The fourth species has a thick stalk, covered with a rugged bark when old; it rises eight or nine feet high, sending out many slender rush-like branches of a silvery colour, almost taper, which terminate in very slender bending ends; these have a few narrow spear-shaped leaves on the lower branches: the flowers are produced in very short spikes or clusters on the side of the branches; are small and

white. It is a native of Spain and Portugal, flowering in June and July.

- The fifth has an upright stem: the branches numerous, slender, round, smooth, slightly striated, having a few tubercles scattered over them, below leaflets: the leaves on the younger branchlets small, lanceolate, deciduous, silky, with very short hairs pressed close: the flowers small, racemed, each on a very short pedicel. It is a native of the South of Europe and Barbary, flowering in June and July.

The sixth species is a shrub wholly covered with alternate spines, on which the flowers are placed; this renders it quite inaccessible: the branches and leaves are striated and ash-coloured, and the latter are a little villose: the flowers are yellow and rather large. It is a native of the South of Europe and Barbary, flowering in March and April.

The seventh has the stalks and branches slender, having a few trifoliate and single leaves towards the bottom: the branches have six angles or furrows: the flowers small, of a pale yellow colour, produced in loose spikes at the ends of the branches, rarely producing seeds in this climate. It is a native of the Levant.

The eighth species has stalks five or six feet high, sending out many flexible branches, armed with long spines: flowers terminating in clusters, each upon a long pedicel: corolla bright yellow, appearing in June. It is a native of Italy and Spain.

Culture.—The three first sorts are hardy, but the others more tender, especially in their young growth.

They are all capable of being raised from seeds, and the double-blossomed sorts by layers and cuttings. The seeds should be sown in the early spring, as about April; the hardy sorts in beds of common earth, either in drills or by bedding in to the depth of an inch: but in the tender sorts in pots or beds hooped over to protect them in frosty weather. In the following spring they should be removed into nursery-rows or larger pots, according to the kinds, shortening their tap-roots, and setting them out in rows two feet apart, at the distance of one in the rows, to remain two or three years, when they

may be planted out in the shrubbery, or other places: the tender sorts in pots being removed to the green-house or garden for protection in winter, being managed as the hardy sorts of plants of this kind.

The layers should be laid down in the autumn or spring, and the cuttings may be planted out in the spring or summer, some in the open ground, and others in pots plunged in the hot-bed to promote their striking root. They may be managed afterwards as the other sorts.

This is the only certain mode of preserving the varieties.

The hardy sorts are very ornamental in the borders, clumps, and other parts, and the tender kinds in greenhouse collections, and among other more hardy potted plants.

PLATE LV.

1. SPIRÆA LOBATA.

LOBE-LEAVED MEADOW SWEET.

THIS genus contains plants of the shrubby and herbaceous kinds.

It belongs to the class and order *Icosandria Pentagynia*, and ranks in the natural order of *Pomaceæ*.

The characters are: that the calyx is a one-leaved five-cleft perianth, flat at the base, with acute segments; permanent: the corolla has five petals, inserted into the calyx, oblong-rounded: the stamina have more than twenty filaments, filiform, shorter than the corolla, inserted into the calyx: anthers roundish: the pistillum has five or more germs: styles as many, filiform, length of the stamens: stigmas headed: the pericarpium is an oblong capsule, acuminate, compressed, two-valved: the seeds few, acuminate, small, fastened to the internal suture.

The species cultivated are: 1. *S. salicifolia*, Willow-leaved Spiræa; 2. *S. tomentosa*, Scarlet Spiræa; 3. *S. hypericifolia*, Hypericum-leaved Spiræa; 4. *S. argentea*, Silvery-leaved Spiræa; 5. *S. chamædrifolia*, Germander-leaved Spiræa; 6. *S. crenata*, Hawthorn-leaved Spiræa; 7. *S. triloba*, Three-lobe-leaved Spiræa; 8. *S. opulifolia*, Currant-leaved Spiræa; 9. *S. sorbifolia*, Service-leaved Spiræa; 10. *S. Aruncus*, Goat's-beard Spiræa; 11. *S. filipendula*, Common Dropwort; 12. *S. ulmaria*, Common Meadow Sweet; 13. *S. trifoliata*, Three-leaved Spiræa.

The first has the stalks very taper, and rough towards the top, and covered with a reddish bark: the leaves about three inches long, and an inch broad in the middle, bluntly serrate, and of a bright green colour. In rich moist ground the stalks rise five or six feet



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Engraved by E. Sanfem

Spiraea Tobata
1 *Lobe leaved Meadow Sweet*

Sisyrinchium iridioides
2 *Iris leaved Sisyrinchium*

high, but in moderate land from three to four; as their whole height is one year's growth from the root: they are terminated by spikes of pale red or flesh-coloured flowers. It flowers in June and July; and in moist seasons there are frequently young shoots from the root which flower in autumn. It is a native of Siberia.

There are several varieties: as the Flesh-coloured Willow-leaved, the Alpine Willow-leaved, the Panicked Willow-leaved, and the Broad Willow-leaved *Spiræa*.

The second species has the stalks slender, and branching out near the ground, with a purple bark covered with a gray mealy down: the leaves smaller than those of the first, downy and veined on their under side, but of a bright green above: the branches terminated by a thick raceme of flowers, branched towards the bottom into small spikes: the flowers very small, of a beautiful red colour, appearing in July, August and September. It is a native of Pennsylvania.

The third rises with several slender shrubby stalks five or six feet high, covered with a dark brown bark, sending out small side branches the whole length: the leaves small, wedge-shaped, having many punctures on their surface: the flowers in small sessile umbels, each on a long slender pedicel, and white: they appear in May and June; and as the flowers are produced almost the whole length of the branches, it makes a good appearance during the time of flowering. It is a native of Italy and America.

The fourth species has striated erect branches, with short branchlets: the leaves alternale, petioled, silky-tomentose on both sides: the racemes longer than the branchlets: the flowers very small, with villose germs. It is a native of New Granada.

The fifth has abundant shoots, seldom two ells high, the thickness of the finger, wand-like, branched: the wood brittle: the bark of the shoots yellowish-brown, with prominent dots scattered over it: the branches alternate, commonly angular, with a testaceous bark somewhat striated, and in the younger branches covered with a tender ash-coloured epidermis, which falls off; the annual shoots are grooved and pubescent: the leaves alternate, softish, pubescent with

prostrate hairs, quite entire at the base, but commonly gash-serrate from the middle to the end, where they are sharp: corymbs at the top of the stems frequent, many-flowered, terminating the annual alternate shoots: in gardens and in moist shady places these corymbs are more elongated; but in a ruder soil most of the peduncles are clustered at the top like an umbel: the flowers biggish, white, having a weak virose smell, and fugacious. It is a native of Siberia, &c.

It varies very much, with larger or smaller leaves, more or less cut, but more commonly quite entire and ovate-acute.

The sixth species has several stems, scarcely two ells high, very much branched from the bottom: the branches rod-like, round, with a testaceous bark cloven longitudinally: the leaves on the younger branches and annual shoots alternate, attended with smaller ones in little bundles, hoary or glaucous, three-nerved, hardish, varying in form and size; on the luxuriant shoots or branches sometimes ovate-acute, widish, serrulate from the tip beyond the middle; but commonly oblong, bluntish, crenulate, or serrulate towards the tip, or more commonly quite entire: the corymbs at the ends of the annual twigs, very abundant, disposed along the branches on one side in hemispherical clusters: the flowers smallish, white, odorous. It is a native of Spain, &c. flowering here in April and May.

The seventh has numerous stems, scarcely thicker than a swan's quill, very much branched, upright, with a gray bark more or less pale, and somewhat angular, with sharp streaks running down from the branches: the branches and branchlets alternate, those of the last year very smooth and yellow, leafy, and terminated by an umbel: the leaves alternate, on very short petioles, smooth, glaucous, wide-ovate, retuse, gash-trilobate: they vary even in the garden, with fewer or more frequent gashes, with the teeth or lobes obtuse or acute, in breadth, &c.: the umbels very frequent at the ends of the annual branches: peduncles often more than thirty, besides a few axillary ones scattered below the umbel: the flowers middle-sized, white. It is an elegant shrub, and a native of Siberia.

The eighth species rises with many shrubby branching stalks, eight or ten feet high in good ground, but generally five or six;

they are covered with a loose brown bark which falls off: the leaves about the size and shape of those of the common currant bush, ending in acute points, and serrate on their edges: the flowers are produced in roundish bunches at the end of the branches; are white with some spots of a pale red. It is a native of Canada and Virginia. It is commonly known in the nurseries by the name of Virginian Gelder Rose.

The ninth rises with shrubby stalks like the first, but sends out horizontal branches, which are slender, and covered with a brown bark: the leaves are of a thin texture, and a bright green colour on both sides, slightly and acutely serrate: the flowers in terminating panicles, small and white. It is a native of Siberia, flowering in August.

The tenth species has a perennial root: the stem annual, from three to four feet high: the leaves doubly pinnate; each having three or four pairs of oblong leaflets terminated by an odd one: they are two inches long, and almost an inch broad, serrate, and ending in acute points: the flowers disposed in long slender spikes, formed into loose terminating panicles; they are small, white, and of two sexes in the same spike. It is a native of Germany, flowering in June and July.

The eleventh has a perennial root, consisting of oval tubers or solid lumps, hanging from the main body by threads, which has given occasion to its common names, Filipendula and Dropwort. These tubers enable the herb to resist drought, and render it very difficult to be eradicated: the stem is erect, from a foot to a foot and half in height, angular, smooth, leafy, a little branched at top: the leaves alternate, interruptedly pinnate, serrate, and jagged, smooth, composed of several pairs of leaflets, all of each set uniform or nearly corresponding in size; the terminating leaflet three-lobed: a pair of roundish united indented stipules at the base of each leaf, embracing the stem: the flowers many in a cymose loose erect panicle, cream-coloured often tipped with red, or red on the outside. It is an elegant plant, which in gardens grows very luxuriant, and has often double flowers. It flowers early in July.

The twelfth has a perennial fibrous root: the stems erect, three or four feet high, angular and furrowed, tinged with red, leafy, branched in the upper part: the leaves interruptedly pinnate: leaflets very unequal in size, sharply serrate, clothed beneath with white down, the end one remarkably large and three-lobed: a pair of rounded serrate stipules are joined to the common leaf-stalk, and clasp the stem: the flowers white, in a large compound cyme, the side-branches of which rise much above the central one: it perfumes the air with the sweet hawthorn-like scent of its plentiful blossoms from June to August.

There are varieties with double flowers, and with variegated leaves.

The thirteenth has a perennial root: the stalks annual, about a foot high, sending out branches from the side the whole length: the leaves for the most part trifoliate, but sometimes single or in pairs; they are about an inch and half long, and half an inch broad, ending in acute points, sharply serrate, of a bright green above, and pale beneath: the flowers in loose terminating panicles, on slender peduncles. It is a native of North America, flowering in June and July.

Culture.—In all the shrubby sorts, this may be performed by suckers, layers, and cuttings.

The suckers should be taken off in the autumn and planted out where they are to remain, or in nursery-rows, to attain a fuller growth.

The first sort requires to be cleared of these suckers every two years at furthest.

The layers should be put down in the autumn or in the spring, and may be taken off and planted as above, in the autumn or spring following: all the sorts may be raised in this way; but it is most proper for such sorts as do not send off suckers.

The cuttings may be made from the shoots of the preceding summer, and be planted out in a shady border in the early autumn: when they have become well rooted they may be removed and

managed as the others: they succeed in this way with more difficulty than in either of the others.

All the herbaceous sorts may be increased by seeds, or parting the roots.

The seed may be sown in the autumn or early in the spring; but the first is the better mode, on a bed of fine mould: when the plants appear they should be kept clear from weeds till the autumn, when they may be planted out where they are to remain, or in the nursery for a year or two.

The roots should be parted in the autumn or spring, when the stems decay, before they shoot out new ones, being planted immediately where they are to grow.

The double-flowered and striped varieties can only be preserved in this way.

They all afford variety and ornament in the shrubbery and other parts.

2. SISYRINCHIUM IRIDIOIDES.

IRIS-LEAVED SISYRINCHIUM.

THIS genus contains plants of the flowery perennial kind.

It belongs to the class and order *Monadelphia Triandria*, and ranks in the natural order of *Ensatae*.

The characters are: that the calyx is a common ancipital spathe, two-valved: valves compressed, acuminate: proper several, lanceolate, concave, obtuse, one-flowered: the corolla one-petalled, superior, six-parted: segments obovate with a point, from erect spreading: three outer alternate, a little wider: the stamina have three filaments, united into a subtriquetrous tube shorter than the corolla, distinct at the top: anthers bifid below, fastened by the back: the pistillum is

an o'ovate inferior germ: style three-sided, length of the tube: stigmas three, thickish, awl-shaped at the top, erect: the pericarpium is an obovate capsule, rounded, three-sided, three-celled, three-valved; with the partitions contrary: the seeds several, globular.

The species are: 1. *S. Bermudiana*, Iris-leaved Sisyrinchium; 2. *S. anceps*, Narrow-leaved Sisyrinchium.

The first has a fibrous root, from which arise some stiff sword-shaped leaves, four or five inches long, and half an inch broad, of a dark green colour: from among these comes out the stalk (scape) six inches high; it is compressed, and has two borders or wings running the whole length, and three or four spear-shaped leaves embracing it; these grow erect, and are hollowed like the keel of a boat: the stalk is terminated by a cluster of six or seven flowers, on short peduncles, and enclosed in a two-leaved, keel-shaped sheath, before they open; they are of a deep blue colour with yellow bottoms, which, when fully expanded, are an inch over. It is a native of Bermuda.

The second species has a perennial fibrous root, from which arise many very narrow spear-shaped leaves, about three inches long, and scarcely an eighth of an inch broad, of a light-green colour: the stalks about three inches high, very slender, compressed and bordered, having short, narrow, sword-shaped, embracing leaves: they are terminated by two small pale-blue flowers, enclosed in a two-leaved sheath, upon longer peduncles than those of the first sort, flowering about the same time. It is a native of Virginia.

It is observed, that the leaves, stalks, and flowers of the first sort are three times as large as in the second, and the sheath encloses six or seven flowers; whereas the second has rarely more than two, and these expand only for a short time in the morning, while in the former they continue open the whole day.

Culture.—These plants may be increased by seeds and parting the roots: in the former method the seeds of the first sort should be sown in the autumn as soon as they become ripe, on a border which has an eastern aspect, in drills at three or four inches distance,

covering them about half an inch with fine mould: they should afterwards be kept clean from weeds with care. They succeed best in a loamy soil in a shady situation, and where the ground has not been manured.

In the latter sort the seed should be sown in pots, in order that they may be protected in the green-house.

The first affords ornament in the large open borders and clumps, and the latter among other green-house plants.

PLATE LVI.

1. TRADESCANTIA VIRGINICA.

VIRGINIAN SPIDERWORT.

THIS genus furnishes a plant of the hardy herbaceous perennial kind.

It belongs to the class and order *Hexandria Monogynia*, and ranks in the natural order of *Ensatae*.

The characters are: that the calyx is a three-leaved perianth, leaflets ovate, concave, spreading, permanent: the corolla has three orbicular petals, flat, spreading very much, large, equal: the stamina have six filiform filaments, length of the calyx, erect, villose, with jointed hairs: anthers kidney-form: the pistillum is an ovate germ, obtusely three-cornered: style filiform, length of the stamens: stigma three-cornered, tubulous: the pericarpium is an ovate capsule, covered by the calyx, three-celled, three-valved: the seeds few, angular.

The species is *T. Virginica*, Common Virginian Spiderwort, or Flower of a Day.

There are other species that may be cultivated.

It has roots composed of many fleshy fibres: the stalks smooth, rising a foot and half high: the leaves long, smooth, keeled, embracing: the flowers in clusters, composed of three large spreading purple petals: they appear early in June; and though each flower continues but one day, yet such is the profusion, that there is a succession of them through the greater part of the summer. It is a native of Virginia and Maryland, flowering in June.

There are varieties with deep blue flowers, with white flowers, with red flowers, and with purple flowers.



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Engraved by F. Varley

Tradescantia virginica
 1. Virginian Spider-wort

Trillium sessile
 2. Sessile Trillium

Thalictrum aquilegifolium
 3. Feathered Columbine

Culture.—They are readily increased by parting the roots, and planting them out in the autumn, or early in the spring, in a bed or border of common earth.

And also by seeds sown at the same seasons in similar situations, the plants being pricked out into other beds in the summer, and removed in the autumn to the places where they are to grow.

They afford ornament in the common borders among other flower plants.

2. TRILLIUM SESSILE

SESSILE TRILLIUM.

THIS genus furnishes plants of the low, tuberous-rooted, flowery, perennial kind.

It belongs to the class and order *Hexandria Trigynia*, and ranks in the natural order of *Sarmentaceæ*.

The characters are: that the calyx is a three-leaved perianth, spreading: leaflets ovate, permanent: the corolla has three petals, subovate, a little bigger than the calyx: the stamina have six awl-shaped filaments, shorter than the calyx, erect: anthers terminating, oblong, length of the filaments: the pistillum is a roundish germ: styles filiform, recurved: stigmas simple: the pericarpium is a roundish berry, three-celled. the seeds many, roundish.

The species are: 1. *T. cernuum*, Drooping Trillium; 2. *T. erectum*, Upright Trillium; 3. *T. sessile*, Sessile-flowered Trillium.

The first has a perennial tuberous root: the stem is erect, a foot high, simple, round, slightly striated, smooth: the leaves three together, terminating, on short footstalks, spreading, rhomboidal, pointed, entire, veiny, smooth, paler beneath: the flowers solitary, among the leaves, without bractes: the flower-stalk round, a little waved, smooth. It is a native of North America.

The second species has a taller stalk: the three leaves are placed at a distance from the flower, which stands upon a long footstalk, and is erect: the petals are purple, larger, and end with sharper points. It is a native of Virginia, Canada, &c.

The third has a purple stalk: the three leaves grow at the top like the first; but they are much longer, and end in acute points: the petals are long, narrow, and stand erect; are of a dark brownish red: the calyx leaves are streaked with red: the leaves mottled. It grows in Carolina and Virginia.

Culture.—These plants may be increased by seeds, which should be sown on a shady border as soon as they become ripe in the autumn: when they appear in the spring, the plants should be kept clean from weeds, and in the autumn following be planted out where they are to remain and flower.

They succeed best in a light soil, where the situation is rather shaded. They afford variety in such places.

3. THALICTRUM AQUILEGIFOLIUM.

FEATHERED COLUMBINE.

This genus contains plants of the hardy, herbaceous, fibrous-rooted, perennial kinds.

It belongs to the class and order *Polyandria Polygynia*, and ranks in the natural order of *Multisiliquæ*.

The characters are: that there is no calyx, unless the corolla be taken for it: the corolla has four petals, roundish, obtuse, concave, caducous: the stamina have very many filaments, wider at top, compressed, longer than the corolla: anthers oblong, erect: the pistillum, styles very many, very short: germs many, commonly pedicelled, roundish: styles none: stigmas thickish: there is no pericarpium: the seeds many, grooved, ovate, tailless.

The species cultivated are: 1. *T. tuberosum*, Tuberous-rooted Meadow Rue; 2. *T. Cornuti*, Canadian Meadow Rue; 3. *T. fœtidum*, Fetid Meadow Rue; 4. *T. angustifolium*, Narrow-leaved Meadow Rue; 5. *T. lucidum*, Shining-leaved Meadow Rue; 6. *T. aquilegifolium*, Columbine-leaved Meadow Rue, or Feathered Columbine.

The first has knobbed roots: the leaves small, obtuse, indented in three parts at their points, of a grayish colour and smooth: the stalks rise a foot and half high, and are naked almost to the top, where they divide into two or three small ones, under each of which is placed one leaf; every division is terminated by a small bunch of pretty large flowers, disposed almost in form of an umbel, each composed of five white petals. It is a native of Spain, flowering in June.

The second species attains the height of three feet: the stems suffruticose, dark purple, branched: leaves resembling those of Columbine, but glaucous: the flowers in many pale-purple heads, five-petalled and white. It is a native of North America, flowering from May to July.

There is a variety, which is smaller, with pale purple filaments.

The third has the stem about six or seven inches high: the leaves downy, composed of a great number of small leaflets, which are bluntly indented, and have a fetid scent: the flowers in loose panicles, small, and of an herbaceous white colour: the leaves are somewhat hairy on both sides, pulpy and soft: the petals themselves are somewhat hairy, in the young plant reddish, but in the adult whitish, almost a foot high, and not very leafy. It is a native of the south of France, Switzerland, &c. flowering from May to July.

The fourth species has the stems from two to three feet high: the flowers small, collected in terminating panicles, and of an herbaceous white colour. It is a native of Germany and Switzerland, flowering in June and July.

The fifth has the stems upright, channelled, five or six feet high, having at each joint pinnate leaves, composed of many linear fleshy leaflets, which are for the most part entire, and end in acute points: the flowers are of a yellowish-white colour; they appear in July, and

are succeeded by small angular capsules, with one small oblong seed in each, which ripens in August. It is a native of France, about Paris, and of Spain.

The sixth species has a thick fibrous root; the stems taper, rising three feet high: the leaves like those of Columbine: the flowers in large terminating panicles. It is a native of Scania, Switzerland, &c.

There are varieties with a green stalk and white stamens, and with a purple stalk and stamens. There are other sorts that may be cultivated for variety.

Culture.—All the sorts are readily increased by parting the roots, and planting them out in the autumn when the stems decay, or in the spring before the new ones are sent forth; the strongest where they are to remain, and the weaker ones in nursery-rows for further growth: they may also be raised from seeds, which should be sown in a bed or border in the spring; when the plants rise, they should be kept clean, and be planted out where they are to remain, in the following autumn. They afford variety in the borders, and other parts of ornamented grounds.



Painted by Syd Edwards

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Engraved by E. Sargent

Trollius Americanus
 'American Globe flower'

Tropaeolum majus
 'Greater Nasturtium'

PLATE LVII.

TROPÆOLUM MAJUS.

GREATER NASTURTIIUM.

THIS genus furnishes plants of the herbaceous, annual, and perennial, trailing and climbing kinds.

It belongs to the class and order *Octandria Monogynia*, and ranks in the natural order of *Trihilatæ*.

The characters are: that the calyx is a one-leafed perianth, five-cleft, from upright spreading, acute, coloured, deciduous; the two lower segments narrower; horned at the back with an awl-shaped, straight, longer nectary: the corolla has five petals, roundish, inserted into the divisions of the calyx; two upper sessile; the others lower, with oblong ciliate claws: the stamina have eight awl-shaped filaments, short, declining, unequal: anthers erect, oblong, rising: the pistillum is a roundish germ, three-lobed, striated: style simple, erect, length of the stamens: stigma trifid, acute: the pericarpium berries (or nuts) somewhat solid, three, on one side convex, grooved and striated; on the other angular: the seeds three, gibbous on one side, angular on the other, roundish, grooved and striated.

The species cultivated are: 1. *T. minus*, Small Indian Cress, or Nasturtium; 2. *T. majus*, Great Indian Cress, or Nasturtium.

The first has an herbaceous, trailing stem: the leaves almost circular, smooth, grayish: the flowers axillary, on very long peduncles; composed of five acute-pointed petals, the two upper large and rounded, the three under narrow, jointed together at bottom, and lengthened out into a tail two inches long.

There are varieties with deep orange-coloured flowers inclining to red, with pale yellow flowers, and with double flowers.

The second species is larger in all its parts: the borders of the leaves are indented almost into lobes; and the petals are rounded at the top. The fruit consists of three berries, becoming juiceless when ripe, fungous, deeply grooved and wrinkled, gibbous on one side, angular on the other, narrowing upwards. It begins to flower in July, and continues till the approach of winter.

There are varieties with pale yellow flowers, orange-coloured flowers, and the double-flowered.

They are both natives of Peru, and commonly esteemed to be annual plants, though they may be continued through the winter, if they are kept in pots, and sheltered in a green-house or glass case, in like manner as the variety with double flowers.

The stalks will climb six or eight feet high, when they are trained up, and thus the flowers make a good appearance; but when they trail upon the ground, they will spread over the neighbouring plants and become unsightly: the flowers are frequently eaten in salads; they have a warm taste like the garden cress, and hence the plant has its common name of *Nasturtium*; they are likewise used for garnishing dishes: the seeds are pickled, and by some are preferred to most pickles for sauce, under the false name of capers.

Culture.—These plants in all the single varieties may be increased by seeds, which should be sown in the spring in patches where they are to flower in the borders, or in drills in the garden.

They afterwards only require to be kept free from weeds, and to be well supported by sticks.

The double variety must be increased by planting cuttings of the branches in pots of light mould in the early part of summer, placing them in the shade, and giving frequent light waterings: those planted early may be rendered more forward by being plunged in a moderate hot-bed.

It requires to be protected in the green-house in the winter, being well supported with sticks.

They all afford variety in the borders, clumps, &c. in the summer, and the double sorts among potted plants.



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Engraved by P. G. Cantillon

Valeriana rubra
1 Red Valerian

Veronica Sibirica
2 Siberian Speedwell

PLATE LVIII.

1. VALERIANA RUBRA.

RED VALERIAN.

THIS genus contains plants of the hardy herbaceous perennial kind.

It belongs to the class and order *Triandria Monogynia*, and ranks in the natural order of *Aggregatæ*.

The characters are: that there is scarcely any calyx; a superior margin: the corolla a nectariferous tube on the lower side, gibbous: border five-cleft: segments obtuse: the stamina three, or fewer (in one species four): filaments awl-shaped, erect, length of the corolla: anthers roundish: the pistillum is an inferior germ: style filiform, length of the stamens: stigma thickish: the pericarpium a crust not opening, deciduous, crowned: the seeds solitary, oblong.

The species cultivated are: 1. *V. rubra*, Common or Broad-leaved Red Valerian; 2. *V. angustifolia*, Narrow-leaved Red Valerian; 3. *V. Calcitrapa*, Cut-leaved Valerian; 4. *V. Phu*, Garden Valerian; 5. *V. tripteris*, Three-leaved Valerian; 6. *V. montana*, Mountain Valerian; 7. *V. Celtica*, Celtic Valerian; 8. *V. tuberosa*, Tuberous-rooted Valerian; 9. *V. Pyrenaica*, Pyrenean Valerian; 10. *V. olitoria*, Common Corn-Salad, or Lamb's Lettuce.

The first has woody perennial roots, as thick as a man's finger, spreading very wide: the stems about three feet high, round, smooth, grayish, hollow: at each joint are two (sometimes three) smooth, spear-shaped leaves, near three inches long, and an inch broad; the upper part sends out branches by pairs, which, with the principal stem, are terminated by red flowers growing in corymbs. It is a

native of France, Switzerland, Italy, &c. flowering all the summer and autumn.

The second species has the root not so large as in the first sort: the stems two feet high or more, branching on each side from the root to within six inches of the top: the leaves three or four inches long, but as narrow as those of flax: the upper part of the stem naked, and terminated by a compact corymb of bright red flowers, smaller than those of the former. It is a native of the mountains of France, Switzerland, &c.

The third is an annual plant: the lower leaves, which spread on the ground, are cut into many obtuse segments: the stalks, when the plants are in good ground, rise near a foot and half high, but upon dry stony soils not half so high, and when they grow out of the joints of old walls, not more than three inches in height; are hollow, smooth, and round, sending out branches by pairs from the upper joints: the segments of the pinnatifid leaves are very narrow: stem and branches terminated by tufts (corymbs) of flowers shaped like those of the fourth sort, but smaller and tinged with flesh-colour at the top. It is a native of the South of France, &c. flowering early in the spring.

It varies with the lower leaves pinnatifid.

The fourth species has thick roots, fleshy, jointed, spreading near the surface in a very irregular manner, crossing each other, and matting together by their small fibres: many of the root-leaves entire, others divided into three, five, or seven, obtuse lobes of a pale green, and quite smooth: the stems three or four feet high, hollow, sending out lateral branches by pairs: the stem-leaves opposite at each joint, composed of four or five pairs of long narrow leaflets, terminated by an odd one: the stem and branches terminated by corymbs of small white flowers. It is a native of Silesia, Barbary, &c. flowering from May to July, with the odour of the flowers very pleasant.

The fifth has a perennial root, long, unequal, brownish, strong-smelling: the root-leaves oblong-cordate, bluntish, smooth, obtusely serrate-toothed, on long petioles; the two first of these that come out

are more inclined to roundish, and are only slightly crenate: the stem upright, undivided, about a foot high: the stem-leaves two or three pairs, smooth, ternate, on short petioles: leaflets confluent at the base, lanceolate, acute, unequally subserrate, the middle one larger than the others: they vary much, being gash-serrate, crenate, or even quite entire; the uppermost are sometimes lanceolate-linear and quite entire, sometimes pinnate with five leaflets: the flowers numerous, white, in loose corymbs. It is a native of the Alps of Switzerland, flowering here from March to May.

The sixth species agrees in stature and habit with the preceding; but this is more tufted, and has the root commonly creeping horizontally, more divided, and not smelling so strongly: all the leaves are acute, unequally serrate or toothed and smooth; the root-leaves are on long petioles, and more or less attenuated at the base towards the petiole: the stem-leaves vary in number, are on short petioles, and rather oblong: the stem is upright, simple, a foot or eighteen inches high: the flowers in a corymb, whitish or purplish. It is a native of Switzerland, Austria, &c. flowering here in June and July.

The seventh species has a perennial root, black, oblique, with long fibres, smelling very strong, aromatic, caulescent at top and scaly with the remains of the deciduous leaves; it is often in tufts with an upright stem, four or five inches high: all the leaves are quite entire and obtuse; the root-leaves subovate, and attenuated into the petiole at the base; stem-leaves two, opposite, linear and sessile, about the middle of the stem, but there are sometimes none: the stem slender, simple, terminated by a few small whitish flowers in a corymb. It is found in Switzerland, flowering in June.

The eighth species has roots perennial, and tuberous, by which it is easily distinguished. It is a native of the south of Europe, flowering in May and June.

There is a variety with the roots in the form of an olive.

The ninth species has a perennial fibrous root, from which come out many heart-shaped leaves, on petioles more than a foot in length; they are four inches over each way, bluntly serrate, smooth, and of a bright green on their upper surface, but pale and a little

hairy underneath: the stalks rise three feet high, are hollow, channelled, and send out opposite branches towards the top: the stem-leaves opposite, shaped like the lower ones, but a little pointed; and frequently at the top there are ternate leaves standing upon short foot-stalks: the stem and branches are terminated by umbels of pale flesh-coloured flowers, having very short spurs. It flowers in June, and is a native of the Pyrenees.

The tenth has a small annual, fibrous, pale brown root: the stem dichotomous, somewhat spreading, from four inches to a span, and even a foot or more in height (in gardens); round, grooved, or angular, tender, often tinged with purple on one side: the leaves glaucous, pale, obovate-lanceolate or rather linear tongue-shaped: the bottom leaves many, usually entire, but sometimes very slightly toothed near the base, somewhat spreading, rather succulent, smooth, veiny, and a little wrinkled, from three-quarters of an inch to two inches in length: the stem-leaves opposite at each subdivision, sessile, remote, usually more toothed than the bottom leaves: both these and the stem are ciliate or fringed at the edge with fine white hairs: the flowers are very small, of a pale blueish colour, and collected into a close little corymb, protected by an involucre. It is a native of Europe and Barbary, flowering in April and May. It is used in salads in the early spring and winter, under the name of Corn Salad, or Lamb's Lettuce.

There is a variety, which is smaller, with jagged leaves.

Culture.—The two first sorts may be increased by parting the roots, and planting them out in the autumn or spring season where they are to grow.

They may also be raised from seed sown at the same time, in the situations where the plants are to grow.

The third may likewise be raised from seeds, by sowing them as above, without any trouble.

The fourth may be increased by parting the roots, and planting them out in the autumn on fresh ground where they are to grow.

The fifth may be raised in the same way, being allowed good room as it spreads.

The three following sorts are more difficult to preserve, requiring a stony soil and cold exposure.

The ninth sort may be raised from seeds sown in a moist shady border soon after they are ripe, managing the plants as in the first sort.

The last sort, when cultivated for the purpose of salads, should be sown in the latter end of summer, or beginning of autumn, in an open place where it is to grow; the plants being afterwards thinned out by hoeing, and kept clean from weeds; when they will be fit for use very early in the spring while quite young.

All the sorts except the last may be introduced in the borders, for the purpose of variety, and most of them continue many years.

The last is used as an early spring salad herb. *

2. VERONICA SIBIRICA.

SIBERIAN SPEEDWELL.

THIS genus comprises plants of the herbaceous perennial and shrubby kinds.

It belongs to the class and order *Diandria Monogynia*, and ranks in the natural order of *Personatae*.

The characters are: that the calyx is a four-parted perianth, permanent: segments lanceolate, acute: the corolla one-petalled, wheel-shaped: tube length almost of the calyx: border four-parted, flat, with ovate segments; the lowest narrower, the segment opposite to this wider: the stamina have two filaments, narrower at bottom, ascending: anthers oblong: the pistillum is a compressed germ: style filiform, length of the stamens, declined: stigma simple: the pericarpium is an obcordate capsule, compressed at the top, two-celled, four-valved: the seeds numerous, roundish.

The species cultivated are: 1. *V. Sibirica*, Siberian Speedwell; 2. *V. Virginica*, Virginian Speedwell; 3. *V. spuria*, Bastard Speedwell; 4. *V. maritima*, Sea Speedwell; 5. *V. longifolia*, Long-leaved Speedwell; 6. *V. hybrida*, Welsh Speedwell; 7. *V. incisa*, Cut-leaved Speedwell; 8. *V. decussata*, Cross-leaved Speedwell.

The first has a perennial root: the stem four feet high, rough-haired: the leaves six or seven in whorls, twice as wide as those of the second sort: peduncles terminating solitary; the lateral ones with two opposite oval leaflets: the calyxes five-cleft: the corollets blue, with an oblong tube, and small acute border: the stamens and pistil twice as long as the corolla. It is a native of Siberia, flowering in July and August.

The second species has the stems erect, four or five feet high, having four or five lanceolate leaves in whorls at each joint, serrate, and ending in acute points: the stems are terminated by long slender spikes of white flowers, which appear late in July. It is a native of Virginia and Japan.

It varies with blush-coloured flowers.

The third has a perennial root, sending out many offsets: the lower leaves two inches long, and half an inch broad, pale green and hairy: the stems a foot high, with very narrow lanceolate leaves, placed opposite, and having a few slight serratures on their edges: the stems terminated by long spikes of blue flowers, which appear in June and July. It is a native of Siberia and Germany.

There is a variety of this also with a flesh-coloured flower.

The fourth species has the stalks not so long as those of the preceding: the leaves by fours and threes round the stalk, on longer footstalks; they are broader at the base, run out into long acute points, are unequally serrate, and of a bright green colour: the flowers are of a bright blue, and appear in July. It is a native of the sea-coasts of Europe.

There are varieties with leaves opposite, in threes or in fours, with blue, blueish, flesh-coloured, and with white flowers.

The fifth has the lower leaves two inches long, and an inch broad in the middle, drawing to a point at each end, serrate, and of a lucid

green colour: the stems a foot and a half high, with leaves of the same shape but smaller, and placed opposite; they are terminated by long spikes of blue flowers, which appear in June. It is a native of Germany, Austria, and Russia.

The sixth species has the stems very white and woolly, about a foot high: the leaves oblong, hoary, two inches and a half long, three quarters of an inch broad, sessile: the flowers deep blue in terminating spikes, and from the upper axils: they appear in June and July. It is a native of Russia, Ukrain Tartary, &c.

There is a variety with white flowers.

The seventh has the spikes aggregate, the flowers large, the leaves an inch long, lanceolate wedge-shaped at the base, with lanceolate segments. It is a native of Siberia, flowering in July and August.

The eighth species is a bushy shrub about two feet high: stem upright, round, very much branched: the branchlets alternate, spreading, round or indistinctly quadrangular, closely leafed on every side, having a pubescent line on each side running down from the oppositions of the leaves, which spread very much, are scarce an inch long, acute, coriaceous, smooth and even, one-nerved, paler underneath, evergreen, border cartilaginous, on very short concave smooth petioles, gibbous at the base on the outside: the racemes single, short, few-flowered, towards the end of the branches, not terminating, but just below the top: the pedicels alternate, short, quadrangular, one-flowered. The regular growth of the leaves decussated or crosswise, distinguishes this species immediately.

Culture.—These plants may be raised by seed and parting the roots.

In the annual sorts the seeds should be sown in the autumn or very early spring, in the borders or places where the plants are to grow, being lightly covered in: if the seeds be permitted to scatter, good plants may be raised: sometimes they are sown on beds to be afterwards removed.

In the perennial sorts the roots may be parted in the autumn or early spring, and planted out where they are to grow, or in nursery-rows to be afterwards removed.

They should not be parted too small, or oftener than every two years: the large-growing sorts are proper for the borders, clumps, &c. and the trailing kinds for banks and shady slopes, or other similar places: they are hardy, and require only to be kept clean afterwards.

The eighth sort is readily increased by cuttings in the spring and summer, being managed as a hardy green-house plant in the same way as the Myrtle.

In very mild winters it sometimes stands secure in the open air.

The annual and perennial sorts afford variety in the borders, clumps, and other parts of pleasure-grounds, and the last among plants of the hardy potted green-house kinds.



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Vinca Rosea
 1 *Madagascan Periwinkle*

Viburnum Tinus
 2 *Laurustinus*

PLATE LIX.

1. VINCA ROSEA.

MADAGASCAR PERIWINKLE.

THIS genus comprehends plants of the shrubby, evergreen, upright, and trailing kinds.

It belongs to the class and order *Pentandria Monogynia*, and ranks in the natural order of *Contortæ*.

The characters are: that the calyx is a five-parted perianth, erect, acute, permanent: the corolla one-petalled, salver-shaped: tube longer than the calyx, cylindric below, wider above, marked with five lines, the mouth a pentagon: border horizontal, five-parted: segments fastened to the apex of the tube, wider outwards and obliquely truncate: the stamina have five filaments, very short, inflexed and retroflexed: anthers membranaceous, obtuse, erect, curved in, fariniferous on both sides at the edge: the pistillum has two roundish germs, with two roundish little bodies lying by their sides: style one common to both, cylindric, length of the stamens: stigma capitate, concave, placed on a flat ring: the pericarpium has two follicles, round, long, acuminate, erect, one-valved, opening longitudinally: the seeds numerous, oblong, cylindric, grooved, naked.

The species cultivated are: 1. *V. minor*, Small Periwinkle; 2. *V. major*, Great Periwinkle; 3. *V. rosea*. Madagascar Periwinkle.

The first has a perennial creeping root, with branched fibres: the Whole plant smooth and shining: the stems round, slender, leafy, erect when in flower, from nine inches to a foot in height, and much higher when supported by bushes, marked on each side with a groove faintly impressed; after flowering, prostrate, elongated,

taking root at their joints. According to Woodward, the flowering-stem is upright in the spring, but in autumn the flowers are borne on the shoots of the year, which are trailing: the leaves opposite, on footstalks about one-fourth the length of the leaves, which are quite entire, evergreen, shining, somewhat like those of Privet, not having the fringed edge observable in the second sort: the flowers axillary, alternate, solitary, void of scent, on nearly upright peduncles, almost twice the length of the leaves, round, smooth, and shining, pale blue. It is a native of Germany.

It varies in the colour of the flowers; with pale blue, with purple and white, and with double flowers; and the foliage is sometimes variegated either with white or yellow stripes.

The second species is larger in all its parts than the preceding: the stems erect, finally rooting at the end: the leaves broad-ovate, three inches long, and two broad, of a thick consistence, finely fringed with short rigid hairs at the edge, on thick footstalks: the flowers solitary, alternate, on peduncles half the length of the leaves, of a purple-blueish colour. It is a native of France, Spain, &c flowering in May.

The third has an upright branching stem, three or four feet high, when young, succulent, jointed, purple; but as the plant advances the lower parts become woody: the branches have the joints very close, are covered with a smooth purple bark, and have oblong, ovate, entire leaves, two inches and a half long, and an inch and half broad, smooth and succulent, setting pretty close to the branches: the flowers axillary, solitary, on very short peduncles: tube long and slender: brim spreading open, flat, divided into five broad obtuse segments, which are reflexed at their points: the upper surface of the petal is of a bright crimson or peach colour, and their under side pale flesh-colour: there is a succession of flowers, from February to the end of October. It is a native of Madagascar, China, &c.

Culture.—These plants are all capable of being increased by layers, cuttings, and suckers.

In the first method, when the layers of the trailing branches are

put down into the ground, they readily take root at almost any season. This is very much the case with the first sort, as almost every joint furnishes plants in the course of the summer ready to be put out in the autumn.

The cuttings may be made from the stalks and branches, and be planted in shady borders in the autumn or early spring, where they will become well rooted by the following autumn.

All the sorts succeed in this way.

In the third sort the cuttings should be made from the young shoots and planted in pots, plunging them in a hot-bed or the bark-bed, where they will become perfectly well rooted in the same year, and may be potted off separately, being placed in the stove, and shifted as may be necessary into large pots.

This sort may likewise be raised from seed, which should be sown in pots in the early spring filled with light rich earth, covering them well in, and plunging the pots in the hot-bed, or the bark-bed of the stove; and when the plants have a few inches growth, they should be pricked out into separate pots, replunging them in a hot-bed, giving proper shade and water, managing them afterwards as the cuttings.

The suckers may be taken off with root-fibres in the autumn or spring, and planted where they are to grow.

The two first sorts afford variety in the borders, clumps, &c. while the last has a fine effect in stove collections.

2. VIBURNUM TINSU.

LAURUSTINUS.

THIS genus contains plants of the deciduous and evergreen flowering kind.

It belongs to the class and order *Pentandria Trigynia*, and ranks in the natural order of *Dumosa*.

The characters are: that the calyx is a five-parted perianth, superior, very small, permanent: the corolla one-petalled, bell-shaped, five-cleft: segments blunt, reflexed: the stamina have five awl-shaped filaments, length of the corolla: anthers roundish: the pistillum is an inferior germ, roundish: style none, but in its stead a turbinate gland: stigmas three: the pericarpium is a roundish berry, one-celled; the seeds bony, roundish.

The species cultivated are: 1. *V. Lantana*, Wayfaring Tree; 2. *V. Opulus*, Water Elder; 3. *V. Lentago*, Pear-leaved Viburnum; 4. *V. Cassinoides*, Thick-leaved Viburnum; 5. *V. nitidum*, Shining-leaved Viburnum; 6. *V. laevigatum*, Cassioberry Bush; 7. *V. nudum*, Oval-leaved Viburnum; 8. *V. prunifolium*, Plum-leaved Viburnum; 9. *V. dentatum*, Tooth-leaved Viburnum; 10. *V. Tinus*, Laurustinus or Laurustine.

The first is a thickly-branched shrub or small tree, having round, pliant, mealy twigs, with the same kind of tufted stellated pubescence as is found on the flower-stalks, backs, and even upper surfaces of the leaves: the leaves opposite, somewhat elliptical, cordate, obtuse, serrate, strongly veined, turning dark red before they fall in autumn: stipules none: the flowers whitish, in large terminating, solitary, many-flowered cymes. It is a native of most parts of Europe, flowering here in May. It is sometimes known by the

name of Pliant Mealy Tree; and according to Withering, the bark of the root is used to make birdlime.

There is a variety in North America with larger leaves, of a bright green; and with variegated leaves in nurseries.

The second species is a small bushy tree, smooth in all its parts, and very much branched: branches opposite, round: the leaves subcordate, with three great unequally serrate lobes, veined, paler beneath; their petioles bearing several cup-like glands towards the top, and a pair or two of erect linear appendages, scarcely to be called stipules, near the base: the cymes terminating, solitary, composed of many white flowers, radiant; the inner perfect, small, resembling those of Elder, those in the margin abortive, consisting merely of a large irregular flat petal without any organs of fructification: the stigmas nearly sessile, close together: the berries drooping, globular, crowned with five very small scales of the calyx, red, very succulent. It is a native of Europe, flowering early in June; the bright red berries ripen about September, and towards the middle of October the leaves assume a beautiful pink colour.

There is an American variety, which is a shrub, that has the twigs of a shining red colour, and which rises eight or ten feet high, with many side branches, covered with a smooth purple bark: the leaves cordate-ovate, ending in acute points, deeply serrate, having many strong veins, and standing upon very long slender footstalks.

There is another beautiful variety common in plantations under the name of Guelder Rose, bearing large round bunches of abortive flowers only, which rises to the height of eighteen or twenty feet if permitted to stand: the stem becomes large; the branches grow irregular, and are covered with a gray bark: the leaves are divided into three or four lobes, somewhat like those of the Maple; they are about three inches long, and two and a half broad, jagged on their edges, and of a light green colour: the flowers come out in a large corymb, are very white, and, being all neuters, are barren; from their extreme whiteness, and swelling out into a globular form, some country people have given this shrub the name of *Snow-ball Tree*. It is also sometimes called *Elder Rose* and *Rose Elder*.

The third has the branches bent or hanging down: the petioles waving on the edge: the leaves thick, like those of the tenth sort, smooth, serrulate with very small teeth: the germ terminating, awl-shaped, ventricose at the base. It is a native of North America, flowering here in July.

The fourth species has the lowest leaves obovate; the next ovate; the upper ones lanceolate. It is a native of North America. It flowers in June.

The fifth is a native of North America. It flowers in May and June.

The sixth species has the leaves petioled, broad-lanceolate, sharpish, without any raised veins: the petioles decurrent along the back, whence the twigs are ancipital: the corymb short: the stem twelve or fourteen feet high, sending out branches from the bottom to the top: the leaves about an inch long, and more than half an inch broad, of a light green colour, opposite, on short footstalks: the peduncles axillary, very short, supporting small umbels of white flowers, which appear in July. It is a native of South Carolina.

The seventh has a strong stem, covered with a brown smooth bark, and rising to the height of ten or twelve feet, sending out woody branches on every side the whole length, which have a smooth purplish bark: the leaves opposite, five inches long and two and a half broad, smooth and of a lucid green above, veined and of a light green beneath, entire at the edges, (indistinctly notched,) and rounded at both ends; of the same thickness with those of the Broad-leaved Laurustinus: the flowers are produced in large umbels (cymes) at the end of the branches, are in shape and colour like those of the common Laurustinus, but smaller; and the stamens are much larger than the corolla: they appear in July, and are succeeded by roundish berries, which, when ripe, are black. It is a native of America, flowering in May and June.

There are varieties with deciduous and evergreen leaves.

The eighth species rises with a woody stalk ten or twelve feet high, covered with a brown bark, and branching its whole length: the branches, when young, are covered with a smooth purple bark:

the leaves two inches long, and an inch and quarter broad, slightly serrate, and on short slender footstalks, opposite or without order: the flowers in small umbels (cymes) lateral and terminating; these are white, and smaller than in the first sort, appearing in June, and are sometimes succeeded by berries. It grows naturally in most parts of North America, where it is commonly called *Black Haw*.

The ninth has the stalks soft and pithy, branching out greatly from the bottom upward, and covered with a gray bark: the leaves three inches long, and nearly as broad, strongly veined, of a light green colour, placed opposite upon pretty long footstalks: the flowers in terminating corymbs, white, and almost as long as those of the first sort, appearing in June. It is a native of North America.

There are varieties with the leaves smooth on both sides, and with the leaves downy underneath and drawn out to a point.

In the tenth species the leaves are seldom more than two inches and a half long, and an inch and quarter broad; they are rounded at their base, but end in acute points, are veined and hairy on their under side, and not of so lucid a green colour as the following sort on their upper.

There are several varieties; as the smaller hairy leaved, in which the umbels (cymes) of flowers are smaller, and appear in autumn, continuing all the winter. The plants are much hardier.

The shining-leaved, in which the stalks rise higher, and the branches are much stronger: the bark is smoother, and turns of a purplish colour: the leaves are larger, of a thicker consistence, and of a lucid green colour: the umbels (cymes) are much larger, and so are the flowers; these seldom appear till the spring, and when the winters are sharp, the flowers are killed, and never open unless they are sheltered.

There is a sub-variety of this with variegated leaves; with gold and silver-striped; in which the branches are warted, the younger ones four-cornered: the leaves opposite, ovate, on short petioles, rigid, shining, perennial; the younger ones hirsute, with short ferruginous villose hairs: flowers in crowded cymes, with little bractes between them: the corolla white; and the berries, when ripe, blue.

The common, with narrower leaves, hairy only on the edge and veins underneath: the fruit smaller.

And the upright *Laurustinus*.

Culture.—These plants may some of them be increased by seeds, most of them by layers, many by cuttings, and a few by suckers.

The seeds in the deciduous kinds should be sown in the autumn or spring in beds of light fine mould, being well covered in. The plants appear in the first or second year, and when they are of a twelvemonth's growth they should be planted out in nursery-rows, to be continued till of proper growth to plant out in the shrubberies or other parts of pleasure-grounds, as from two to five feet.

In the *Laurustinus* kinds, the seeds after being mixed with mould in the autumn soon after they become ripe, and exposed to the air and rain in the winter, should in the spring be sown on a gentle hot-bed, or in pots plunged into it; the plants being continued in the bed till the autumn, when they should be removed and managed as in the layer method. The plants raised in this way are said to be hardier than those raised from layers.

The first sort is tedious in being raised from seeds.

In the layer, which is the most expeditious mode of raising most of these plants, the young lower branches should be laid down in the autumn or spring, being pegged down in the usual manner in the earth, when they mostly become well rooted in a twelvemonth, and may then be taken off and planted out where they are to remain, or in the nursery; and sometimes, in some of the kinds, a few are put in pots.

The best season for removing the tenth sort is in the early autumn, that they may be well rooted before the winter.

The first sort succeeds best by layers put down in the autumn. And the striped variety may be increased by budding it upon the plain sort.

The cuttings may be made in the autumn from the strong young shoots, being planted in a moist border in rows, when in the following summer many of them will be well rooted, and form little plants. Most of the deciduous sorts may be raised in this way.

The suckers should be taken up in the autumn or spring with root-fibres, and be planted out in nursery-rows to have a proper growth. The Guelder Rose may be readily increased in this way, and sometimes the *Laurustinus*.

The fourth sort is rather tender in winter while in its young growth, as well as the sixth, and should have protection in that season. A plant or two should be constantly laid in pots under shelter. This last is easily increased by layers.

These plants afford much variety and effect in shrubbery and other parts of pleasure-ground, when planted out in a mixed order. The evergreen sort are often used to cover disagreeable objects. The flowering evergreens are likewise often set out in pots.

PLATE LX.

1. WACHENDORFIA PANICULATA.

PANICLED WACHENDORFIA.

THIS genus furnishes plants of the exotic flowering perennial kind, for the green-house.

It belongs to the class and order *Triandria Monogynia*, and ranks in the natural order of *Ensatae*.

The characters are: that the calyx is a two-valved spathe: the corolla six-petalled, unequal: petals oblong, the three upper ones more erect, three lower spreading: nectary of two bristles at the inner sides of the upper petal: the stamina has three filiform filaments, declined, shorter than the corolla: anthers incumbent: the pistillum is a superior germ, roundish, three-cornered: style filiform, declined: stigma simple: the pericarpium is a subovate capsule, three-sided, obtuse, three-celled, three-valved: seeds solitary, rough-haired.

The species cultivated are: 1. *W. thyrsiflora*, Simple-stalked Wachendorfia; 2. *W. paniculata*, Panicked Wachendorfia; 3. *W. hirsuta*, Hairy Wachendorfia.

The first has a thick tuberous root, reed-like, of a deep-red colour, sending out many perpendicular fibres of the same colour, and spreading into several offsets: the leaves, which rise immediately from the root, are large, with five plaited folds; the biggest are two feet long, and three inches broad, of a deep green colour: the flower-stalk rises from the centre of the heads between the leaves to the height of three or four feet, with leaves of the same form with those below, but narrower, and ranged alternately, embracing the stalk half round with their base: the flowers when young are enclosed



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1 *Wachendorfia paniculata*.
Panicled Wachendorfia

2 *Vitex Nigundo*
Five-leaved Chaste-Tree.

in sheaths, which, after some time, open and make way for the flowers to come out; then they wither and dry, but remain upon the stalk like those of the yellow *Asphodel*: they form a loose spike, and there are several upon one common peduncle, which open one after the other: the upper flowers stand almost upright, but the lower nod; they are hairy and of a saffron colour on the outside, but smooth and yellow within. It is a native of the Cape.

The second species, when in flower, is a foot high: the root perennial, a little creeping, furnished with oblong cylindrical and nearly perpendicular tubercles: the leaves radical, two-ranked, sessile, equitant, vertical, spreading, dilated on the inner side at the base, channelled, linear-lanceolate, pointed, entire, nerved, bright green, very like those of the first, but only one-third of the size, dying soon after the plant has done flowering, and not appearing again for some months: the stalk erect, cylindrical, bearing one or two small leaves, branched, many-flowered: general flower-stalks alternate, spreading, racemose, bearing from three to five flowers, cylindrical, downy: partial ones short, downy, all directed upwards, single-flowered. It is a native of the Cape.

The third seems chiefly to differ from the second in having hairy leaves, a more slender and taller stem, reddish-brown, and not green as in it; its branches more divaricate, the two upper lateral petals more contiguous, and its flowers when closed form a slenderer and more compact column: the incumbent anthers seem also to be shorter and rounder: the root-leaves oblong, lanceolate, three or four, about three or four inches high: the stem about three times their length: the segments traversed longitudinally on the outside by a brown hairy fillet; outer upper one wholly brown and pubescent outwards: the flowers scentless, opening in succession, closing towards evening: they expand in the month of July. It is a native of the Cape.

Culture.—These plants may be increased by offsets, taken from the heads of the roots, in the beginning of autumn, planting them in pots filled with soft loamy earth, mixed with a little sea sand, and when the season proves dry, placing them so as to have only the

morning sun, until the offsets have taken new roots, when they must be placed in a sheltered situation, so as to have the full sun. On the approach of frosts, they should be placed in frames, and managed as plants of the tender kind.

The second sort is very impatient of cold, and seldom flowers in this climate.

They produce variety among other potted plants of the greenhouse kind.

2. VITEX NEGUNDO.

FIVE-LEAVED CHASTE TREE.

THIS genus contains plants of the hardy and under-shrubby kinds.

It belongs to the class and order *Didynamia Angiospermia*, and ranks in the natural order of *Personatae*.

The characters are: that the calyx is a one-leafed perianth, tubular, cylindric, very short, five-toothed; the corolla one-petalled, ringent: tube cylindric, slender: border flat, two-lipped: upper lip trifid, with the middle segment wider: lower lip trifid, with the middle segment bigger: the stamina have four filaments, capillary, a little longer than the tube, two of which are shorter than the others: anthers versatile: the pistillum is a roundish germ: style filiform, length of the tube: stigmas two, awl-shaped, spreading: the pericarpium is a globular berry or drupe, four-celled: the seeds solitary, ovate.

The species cultivated are: 1. *V. Agnus castus*, Officinal Chaste Tree; 2. *V. incisa*, Cut-leaved Chaste Tree; 3. *V. trifolia*, Three-leaved Chaste Tree; 4. *V. Negundo*, Five-leaved Chaste Tree.

The first has a shrubby stalk eight or ten feet high, sending out their whole-length opposite branches, which are angular, pliable,

and have a grayish bark: the leaves for the most part opposite upon pretty long footstalks; they are composed of five, six, or seven leaflets, spreading out like the fingers of a hand; the lower ones small, and the middle largest; they are smooth and entire; the largest are about three inches long, and half an inch broad in the middle, ending in blunt points, of a dark green on their upper side, but hoary on their under: the flowers are produced in spikes at the extremity of the branches, from seven to fifteen inches in length, composed of distant whorls; in some plants they are white, in others blue. They are generally late before they appear. They have an agreeable odour when they open fair, and make a good appearance in autumn, when the flowers of most other shrubs are gone. It is a native of Sicily.

There are varieties with narrow leaves, with broad leaves, with blue flowers, and with white flowers.

The second species has the stature of the preceding, but smaller in all its parts, with quinate acuminate pinnatifid leaves, pubescent underneath. It is a shrub seldom rising more than three feet high, sending out on every side spreading branches, which are slender and angular: the leaves opposite upon pretty long footstalks; some composed of three, others of five leaflets, which are deeply and regularly cut on their sides, like pinnatifid leaves, and end in acute points: the largest of these leaflets is about an inch and half long, and three quarters of an inch broad in the middle; they are of a dull green colour on their upper side, and gray on their under: the branches are terminated by spikes of flowers three or four inches long, disposed in whorls; in some plants they are white, in others blue, and some have bright red flowers: they are in beauty from the middle of July to the beginning of September. It is a native of China.

The third has the leaflets ovate, acute, quite entire, tomentose underneath, the two nearest to the petiole smaller: the stem is shrubby, branched, round, eight feet high, the thickness of a finger, procumbent, sometimes creeping: the leaves ternate, seldom quinate: leaflets waved, dusky, green above, cinereous-hoary beneath, soft: common petioles long, opposite: the flowers violet in dichoto-

mous, terminating racemes: the fruit small, globular, hard, smooth, black, like pepper, four-seeded. It is a native of the East Indies.

The fourth species has the stem arboreous, twisted, the thickness of the human arm, with spreading branches: the leaflets lanceolate, for the most part quite entire, but sometimes serrate, flat-veined, of a dusky ash colour, on opposite petioles: the flowers purplish, in loose, terminating, erect racemes. It is a native of the East Indies.

Culture.—The first sort may be increased by cuttings and layers: the cuttings should be planted out in the early spring, in a fresh light soil, being often refreshed with water till they have taken root; afterwards the plants must be kept clear from weeds, and be protected during the following winter with mulch or mats; and about the middle of the following March, when the season is fine, be removed into the places where they are to grow, or into the nursery for two or three years to become strong; being pruned up to form regular stems.

The layers of the branches may be laid down in the spring, being careful not to split them, watering them in dry weather; when in about a year they may be taken off and planted out in the same manner as the cuttings.

The second sort may likewise be increased by cuttings, which should be planted in pots, plunged in a moderate hot-bed, covering them with glasses; when well rooted they may be taken up, and be planted in separate small pots filled with light earth, placing them in the shade till fresh rooted, afterwards placing them in a sheltered situation, with other green-house plants, until the autumn, when they must have protection from frost, and have very little water. They are late in putting out leaves in the spring, so as almost to appear dead.

The third sort is raised from cuttings, which should be planted in pots in the early spring, as April, plunging them in a moderate hot-bed, covering them with hand-glasses, being slightly watered; when they have taken root, they should have free air admitted in a gradual manner; then they may be taken up and planted out in separate pots filled with light earth, replunging them in the bed, and

giving due shade. They should afterwards have plenty of free air when the weather is suitable, being treated as tender plants. It must be constantly kept in the stove, having free air in the summer season. It retains its leaves all the year. This may also be raised from layers.

The fourth sort may also be raised from cuttings, in the same manner as the second.

The first sorts may be introduced in the shrubberies, clumps, &c. and the latter kinds afford variety in stove and green-house collections.

THE END.



